Wonder-driven Entrepreneurship Teaching; when working with the ethical and existential dimension in professional bachelor education

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Edited by
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Editorial

In 2015 and 2016, Saxion University of Applied Sciences organized the 2nd and 3rd edition of the Regional Innovation and Entrepreneurship Conference (RIEC). The book that is in front of you now is the result of these two conferences and consists of a number of keynote speeches as well as selected articles that were presented during the different sessions of the conference.

The goal of the RIEC is to add some thoughts to the debate about the influence of innovation and entrepreneurship on regional economic development and vice versa. Started as a part of Saxion's international week, where the focus was teacher – student interaction, the RIEC is adding teacher – techer interaction. The exchange and sharing of applied research and teaching initiatives. The conference is organized by Saxion's research centres of Regional Development and Innovative Entrepreneurship.

In this edition of the conference proceedings, you will find several contributions which highlight the importance of entrepreneurship education for the region in general and innovative teaching approaches.

The RIEC edition 2 and 3 consisted each of two parts, a plenary part with some keynote speeches and part which consists of different expert sessions, in which (honours) students and lecturers could share their completed or still ongoing

research with each other and discuss about findings. In this book, the contributions of both editions are bundled. The first part of this book consists of keynote speeches, followed by some articles and towards the end, several practical educational and business contributions are also included.

The first keynote speech is about venture funding, **Peter Westerhuijs** discussed with the participants about the activities of Ugly Duck Ventures, a business in which he is one of the partners. Ugly Duck Ventures helps companies and universities with bringing unused inventions to the market. It is often happening that useful inventions end up shelved, so to say, because they don't fit completely with the strategy of the company. Ugly Duck takes these ideas and builds new business cases out of it. Supporting entrepreneurship is not just done by the market sector alone, also the government supports the development of entrepreneurship, argues **Andries Heidema**, mayor of Deventer and chairman of the Cleantech Regio Stedendriehoek, a cooperation of seven municipalities in the Eastern part of the Netherlands. Heidema stressed in his keynote speech the importance of sustainable development and commented on the regional strategy of supporting new businesses in this sphere. The third keynote speech was delivered by **Willem Poterman**, entrepreneur. He argued in his contribution about what citizens can do to support sustainable businesses. He talked about the need to look for trends in business and the need to understand how some new start-ups do things completely different and can reach landslide changes in the business landscape.

The second part of the conference consisted of presentations of researchers within different conference tracks. Not all participants handed in a paper for this conference proceedings, but participants reported that the discussions and ideas that were shared during these targeted sessions helped them further in their research. From the papers that have been submitted, some have a more regional development focus while others are more on entrepreneurship education. At the end of this proceedings, some examples of practical developments, for inspiration are included as well.

In terms of regional economic development, or the threats to this, **Sander Reuterink, André Schapink, Arjen Schoenmaker** and **Jacques Bazen**, did some efforts to identify the effects of the EU and Russian sanctions on the economy of the region Twente. By interviewing several companies and using different statistical measures, it turned out that the effects of the sanctions have been limited so far, as most entrepreneurs managed to find different export markets. **Olga Gavrilina** and **Anna Shakray** wrote about the perception of entrepreneurship in Russia among young people and concluded that during the years that students spend at university, their attitude towards entrepreneurship doesn't significantly change. One of the

ways that is used to promote entrepreneurship among students is by means of action learning and letting them take part in real business cases. Several studies conclude that the learning effects of these types of programs can be clearly identified.

Another question is what the effect of these type of student programs is on businesses. **Tom Sonntag, Bart Schroten, Frederique Verburg** and **Jacques Bazen** interviewed all companies which were involved in international student projects the last couple of years and asked these companies if they could use the products that students delivered. The results of the interviews were mixed, but give some good ideas for how to improve the quality of these type of projects in the future. Another issue that relates to regional development is the question in how far the region is an attractive living environment, a concept described by Richard Florida in his book the Rise of the Creative Class. **Idsart Wytzes** and **Marijn Bullens** identified a number of foreign professionals in the creative class in the region Twente and interviewed them about their experience and ideas for improvement, to make this region more attractive for other professionals.

In terms of creating such attractive regional environment, **Han van der Meer** and **Hilde de Groot** introduce the importance of building innovation hubs around universities. They argue that business incubators are not effective enough in growing new enterprises, and a new model of student driven business incubators is needed to enhance the effect of entrepreneurship education and the regional effects of universities. **Nitie Mardjan** explains in his article about a model for improving entrepreneurship education itself. He argues that serious gaming can help to motivate and stimulate students. Another paradigm to entrepreneurship education, about the concept of curiosity and wondering about the world around us and using this to build an entrepreneurship education program is discussed by **Finn Thorbjørn Hansen** and **Sine Maria Herholdt-Lomholdt**.

A practical application of entrepreneurship development is given by **Artyom Fakhrutdinov**, in the form of an overview of the possibilities that companies have to focus on Corporate Social Responsibility. Finally, **Glenn Stern, Jacques Bazen** and **Denis Gavrikov** report about a new educational model, a pressure cooker in which construction engineering students from different countries, work together in teams of mixed nationalities to develop new building concepts. The added value of working together with people of different cultures here is that these differences lead to fresh views on challenges and new creative ideas.

In Memoriam

In this editorial, we as editors would also like to have some attention for something more personal. On the 28th of May 2016, our dear colleague and co-developer of the Regional Innovation and Entrepreneurship conference, prof. Paul Bijleveld passed away at the age of 50. We will always remember Paul for his vision and drive to develop the region of Twente and all his work in developing education and research in this sphere at Saxion University of Applied Sciences. Paul was one of the inspirational forces in developing this conference, and more in general in connecting the practical work on monitoring the effects of universities on the regional economy and economic effects of regional and local government policies with new theories on company location and start-up survival and development. But in the first place we will miss Paul as a person, he displayed true interest in the people around him and was always supporting others where he could.

Enschede, 1 October 2016,
Jacques Bazen
Matthijs Hammer

Introduction: "Growing together"

Drs. Frans G.M. Pol

Director Research Strategy Programme

Saxion University of Applied Sciences

In this introduction, I would like to discuss the importance of a research in an international cooperation linked to Saxion's "centre of gravity": Living Technology.

I chose the title "Growing together" as it is my conviction that 'being strong together' will become increasingly more important. Growing together is what we do from the basis of Saxion as a University of Applied Sciences and that is more than just providing good Bachelor education. In its Strategic Agenda (2012-2016), Saxion recorded that it wants to work on three main goals:

- Providing good education with an excellent yield
- Working on our centre of gravity of High Tech Systems & Materials
- The development of Saxion as a University of Applied Sciences

Saxion's Mission Statement is:

> "Saxion University of Applied Sciences is a knowledge institute with an international focus belonging to the top in the Netherlands. Saxion creates innovative, practical knowledge with students and teacher-researchers as co-creators in a partnership with businesses and institutes.
>
> With that, Saxion makes a contribution to strong regional development."

In April 2013, I was appointed Director of RSP which stands for *Research Strategy Programme*. My most important task is to take Saxion further in its development of a University of Applied Sciences. Saxion has been occupied with internationalization for many years and as soon as you cross the Dutch border, we call ourselves Saxion University of Applied Sciences. So, you could say that we

have been a UAS for a long time. I would like to say that we have taken a number of steps in the UAS process, but a great deal still needs to be done.

First of all, I would like to enter into the detail of my idea of what being a true University of Applied Sciences means. I'm not so much concerned about the exact wording of the definition in this case. I think it is more important that we have to work more on our identity. My point of view is that the identity of a University of Applied Sciences is truly different from that of a "Hogeschool". It is important that we, as employees and students, realise much more strongly and radiate this, that we work for and study at a University of Applied Sciences.

What does a University of Applied Sciences mean in my opinion?

Saxion's history goes back to 1875 and most of the years, Saxion was a Hogeschool where only Bachelor education was offered. An important part of a UAS is that, in addition to Bachelor courses, also Master education is offered. Saxion now has 15 Master programmes, and 4 will start this year or next year. We have almost 27,000 Bachelor students and, additionally, about 400 master students and this directly outlines the bottleneck. That is the reason why we as the RSP, also have the taks to increase the number of Master programmes. This is not a simple task, as – apart from a few exceptions – this involves non-financed Master programmes. If we take a look at the master education our colleagues of Research Universities offer, this certainly concerns unequal competition as this master education is entirely financed.

A third product we focus on is the third cycle. By that we mean the possibilities of the Professional Doctorate. For, if you really want to participate at international level, you will have to be able to offer three cycles as a UAS. The Bachelor programme as the first Cycle with the Master cycle as the second Cycle and then the Professional Doctorate as the third Cycle.

We are starting a pilot this year during which we want to explore the possibilities of a professional doctorate in cooperation with a fellow-university. We want to link this mainly to our core of Living Technology; after all, that is the choice we made as Saxion UAS. We want to be the best in the subject of Living Technology: "our centre of gravity" so to say and in my point of view, this means that you have to have the entire product portfolio with regard to education and research.

I've mentioned Living Technology a number of times. At Saxion we interpret this in a specific way:

> Living technology concerns technology that is at the service of everyday life in all kinds of setting. For example, in health care,

catering, tourism, but also in the more economic and educational corner. Saxion mainly focuses on the application of existing technology.

We've outlined this into further detail in three research programmes:

- Technology for Health & Welfare
- Technoloy for Areas & Living
- Technology for Industries & Business

This takes us to the following subject that we will focus on as the RSP team, namely the professionalising of applied research. This does not mainly concern the content of the research, but especially concerns the improvement of the research method. Research only has a short history at our University of Applied Sciences. In 2001, the first lecturers started, so we're only looking at an odd 10 years of experience. Compared to the older Universities, we are just in our infancy. A total of 700 professors are active at 37 financed Universities of Applied Sciences at this moment. Saxion has almost 50 professors. Our professors form the axis of our applied research. In that, their task is to reinforce the quality of our vocational education by integrally including research skills in all curricula. Furthermore, the professor's task is to carry out applied research aimed at realising improvements and innovations in this professional practice.

Our intention is not to make a copy of the existing, research Universities, but mainly to develop an identity and image as a University of Applied Sciences with "applied" strongly underlined. This concerns applying and by that we mean that our research is – first of all – based on a real issue in society, from a business or institute. Furthermore, the goal of this research is that a product, service or process improvement generates something that is perceived by this practice as an improvement. That is why we make use of existing know-how, which we apply to a real-life case. In a nutshell, we are interested in an improvement, innovation or professionalising of this practice or of the professional active in it.

Saxion wants to do this for its region, the eastern part of the Netherlands, but also at national and international level. At Saxion, we have also started an important project 'Research in Education', and in that, we want to have things arranged in a much more strongly attuned way how research is included in all of the curricula of Saxion's Bachelor and Master programmes.

RSP's next task is to link Saxion University to the European agenda. Europe has many programmes in which a great deal of capital has been invested, which can be used for doing research and the execution of projects. For example, there is the Erasmus+ programme for education and HORIZON2020 for research and innovation.

70 thousand million euros were put into the HORIZON2020 programme for the next 7 years and this programme has three pillars: Excellent Sciences, Societal Challenges and Business & Industries. Especially the latter two are mainly of interest to us as a UAS, so Societal Challenges and Business& Industries. In the previous European Programmes, mainly the Research Universities were very successful. In the current programmes, the emphasis is much stronger on valorisation and impact and those are especially our strong points as a University of Applied Sciences. In order to become successful in Europe, two things are of great importance. First of all, you have to be excellent. Speaking in soccer terms, to be in the champion league in Europe. We will have to prove by means of a well-built track record that we are an important player in the field of Living Technology.

A second important point is having built up a good network on the basis of the content and, this should be both at national and international level. In this context, I'd like to quote a colleague from Brussels, Peter van der Heijden, who was active as a policy functionary with the European Committee for many years:

"Better start with good friends, and after that with funds"

Saxion mainly wants to manifest itself in Europe on the basis of its central focus of Living Technology, and we're making extra investments in this. But, as I mentioned earlier, this is only possible if we do this in cooperation with other partners and that makes the link with the importance of this international week. For: "Increasing knowledge starts with sharing knowledge" and this is high on the agenda of the international week's programme. This takes me back to the title of my introduction: "Growing Together".

I consider it extremely important that we train our students in this new world, in which cooperating and networking are becoming increasingly more important. As our Minister of Social Affairs, Asscher, commented during a conference about the deployment of robots. He indicated that jobs will disappear and there will be new jobs with the introduction of robots. Where technology makes its entry, this has a direct effect on the design of our society. This requires professionals who are able to implement these kinds of changes in such a way that this is function and continues to be at the service of people and society.

I wish you and us an interesting conference and a fruitful International Week. The motto is meeting one another and cooperating. Make contact and try to build up functional relationships and networks with regard to innovative ideas.

Keynote speech 2016: Ugly Duck ventures, High tech start-up business development

Peter Westerhuijs, Ph.D

Ugly Duck Ventures, peter.westerhuijs@gmail.com

My name is Peter Westerhuijs and I'm partner at Ugly Duck Ventures. In this keynote I will explain about this company, especially about the name. First, my background in a nutshell, I studied physics, and hold a PhD in physics. I worked for a couple of years at management positions in multinationals and had the opportunity at some stage to become shareholder and director at a high-tech company. I sold this company around 8 years ago and since that time I operated as a business developer. My focus is on starting new technology ventures. I work for the company Ugly Duck Ventures and like to tell you something about entrepreneurship, some inspiration and some ideas. I do understand that not everyone has entrepreneurial intentions, but still I hope to bring you some inspiration, especially about global entrepreneurship. I will present two international case studies where Ugly Duck is involved. I will discuss about the lessons learned, which I would like to share with you. I am sure there are many people around with a lot of scientific based conclusions, but please don't expect these of me today. I'm more of a practical guy and will show you some lessons we learned in practice.

About Ugly Duck Ventures

Ugly Duck Ventures is actually a brand new company, we started a couple of months ago. We are a group of business developers, business angels and informal investors. All of us are already a long time active in building companies. The idea of Ugly Duck Ventures is to focus on ideas and innovation within companies that lay idle. Companies continuously try to improve their products, they do research and are often also doing all kind of inventions, almost by accident. But, a lot of these beautiful innovations lay idle and are rejected because they don't exactly fit within the core business of the company. We at Ugly Duck Ventures would like to care

about those "Ugly Ducklings" as we call them, these idle rejected innovations, and build beautiful swans out of them. You understand the analogy with the fairy tale with the similar title. Our company's playing field is the research funnel, which you are all familiar with. After brainstorming and research, companies have a lot of ideas from which they select during this "funnel process" and in the end they have only one or a couple of products which they implement in their business model. As Ugly Duck Ventures, we have contacts with multinationals, also with some universities, to learn about their rejected idle new ideas and build business out of them. To be honest, a lot is about licensing and selling to other companies. But our real goal is to look for real disruptive innovations, which we can build into a new venture and sometimes a joint venture. Ugly Duck is an international company, it has offices in Canada and the USA as well, but our focus is on The Netherlands. When looking at our partners or if you like customers, the majority of them are Dutch businesses, some universities and we are working for some venture capitalist companies. The way we work is to take those ideas as entrepreneurs, to really pick them up and get involved with them. We have the vision that sales power is one of the important parts of developing an innovative business. When you are building a venture or working with technology it is important to have strong sales power on the team, to attract capital, this is also a form of sales, but most importantly the search for a launching customer. The earlier you have these launching customers, the better. It helps you in product development and it helps you in getting revenue.

Three international case studies

I have selected for you three case studies, three stories. One about a venture that moved immediately from the start abroad. The second is about a new venture that stayed in its home country for the beginning and only later developed international activities. And the third one is a case we are still working on and we don't know yet exactly what we will do. Ugly Duck is involved in all three cases.

KIOR

The first case study is about the company KIOR. This company is built on an innovation that turns wood into biofuel. There are of course a lot of biofuel companies and all of them are using organic feedstock as basic material. When Ugly Duck became involved, KIOR had just started by two men, in a small town Hoevelaken, not very near to Enschede. These two men were sitting in a small office, doing some tests and working together with universities, in order to get some patents. One of the angel investors of this company was also involved with Ugly

Duck. When I first got in contact with them, they asked me: "What should be our strategy, what should we do? Oh and by the way, we also need money." I didn't know much about biofuels, but the business case was clear, they had a lab scale situation that worked, so the important thing was to get as soon as possible a well working prototype. Starting from this prototype, a venture capitalist should get involved and the product should be put on the market. After a search for capital in The Netherlands and Germany, we ended up with Khosla Ventures and decided to make a deal with them. It was not just about getting funding, but also about ecosystem. Khosla had many more participations in the biofuel sector and brought in expertise and technology exchange. Khosla Ventures had a portfolio of around 20 companies in biofuels and more or less all of them are in competition with each other. But still, they all use the same basic expertise and Khosla Ventures provides that for them and basically it comes down to the fact that only the strongest ones survive. That is an interesting paradox: competition and cooperation in the form of expertise sharing at the same time. It even happens that entrepreneurs move from one venture to the other. That is probably specific to the US, you have some failures first, but you build up expertise which you can use in the future.

Khosla Ventures required that the entire company, these two men, moved to Houston, and that happened. Apparently they had a very promising technology, they moved to the USA, Khosla Ventures put in money, added people to the team, but the role of the two founders was minimized. In 2012 the company got onto the Nasdaq in order to raise enough capital to build a large production plant. That happened and it was built in Mississippi State somewhere. The picture here on the screen is not very clear, but it is their new production plant. The company moved forward, the board was enlarged, Condoleeza Rice for example took place in the board, as you know she is one of the former US secretaries. 2014 however was a very bad year for KIOR, the scaling up of the technology was difficult but especially the company got in trouble because of the decreasing oil prices. Many biofuel companies had the same problem, and then there was the competition with the shale oil fracking companies.

In terms of lessons learned in this case study, I could say the following. Even if you are small, think global. Even if you are just with two persons with limited funds, think global, because there you can really expand. The Netherlands is simply too small. Besides that, choosing the right ecosystem is very important as well. Moving to Houston where there is a lot of knowledge about oil and working together with a venture capitalist helps to accelerate the business tremendously. The next one is an open door, but still nonetheless, it doesn't hurt to mention it, since it was so much obvious: High tech is always international, even if you decide to stay in your home

country and home village, the competition will find you. About working together with venture capitalists, we learned about how to work with them. There are European venture capitalists, but there are also quite a lot of globally active venture capitalists and that is good, since they are always interested in your business proposal. So we learned not to be shy and contact these companies, it is their business to fund well working new technologies. For this particular case, we found that the two founders were a little bit astonished, not just because they moved to another country, but also because suddenly everything that mattered was about financials, milestones, strict planning and the like. Venture capitalists are very much focused on results, so that was for them a big shift. The two founders stepped out of the company, the first one wasn't really happy, because the venture capitalist came with a different strategy, so there was a big discussion about the strategy, especially about scaling up. You can summarize these discussions with taking small or big steps forward in scaling up. You can imagine the long discussions about it. The venture capitalist wanted to do big steps, the two founders wanted small steps and carefully developing the technology and testing each step. One of them stepped out of the company. The other one went on and worked together with the new team. First he was director, then advisor and then shareholder. But he was involved in many entrepreneurial things, so he didn't mind. However, nowadays with the low oil price, both of them are back again in helping to reformulate the strategy of the company and developing technology to deal with the troubles that the company is now in. The last lesson, which you actually see in most high tech companies, is that as an entrepreneur, especially with a technical background, it is hard to stay in the company. High tech means huge investments: you start with the majority of the shares and by attracting capital you dilute and the venture capitalist eventually takes over.

Inashco

The second case is about the company Inashco. Inashco is an urban mining company. Urban mining is another word for recycling. Since every now technology venture starts with an innovation, Inashco is no exception. The innovation of Inashco was a new type of separation technology for refuse. Inashco developed a technology to collect iron from incinerated waste. In many countries, household and other waste is transported to landfills, but in The Netherlands and several other European countries, it is more common to burn waste, sometimes producing energy out of it. Whenever you burn the waste, ash is leftover. Sometimes you can easily collect metals from there, for example with a magnet. With this, you can get larger valuable metal parts out of the ash. The innovation of Inashco is that it has developed a technology to also get the smaller parts out of the ash, a process that

normally spoken is very difficult. They are able to extract iron, copper, aluminium and so on, as well as a surprisingly large amount of silver and gold. The inventors of the technology had a mining background.

Inashco had their invention patented, but it was not a very well described patent and they had only a very small prototype working, something that costed only 1500 euro, something in that range. To develop this business, we were able to make a deal with the company Fondel, active in mining. The trend that we can observe in this sector is that mining, urban mining, recycling are converging and are more and more becoming one. They use the same technology and when you look at the incinerator ash, the percentage of copper is larger than in mines in the earth nowadays. So you can imagine this extraction of copper for example can be very profitable. Companies involved in mining, international metal trade, refining or recycling, tend do both things nowadays. So, as Ugly Duck, this was our first step in urban mining. As mentioned before, we found the Fondel Company ready to invest in Inashco. When Fondel came to Inashco for the first time, they were mildly shocked when they saw the first wooden simple prototype. Their reaction was something like: “What? Our millions into such a stupid machine?” Anyway, the whole thing was scaled up and became a working device. The scale up was so well possible and powerful that it resulted in the first operations as well as the first revenues. Inashco became profitable within one and a half year. The company started in The Netherlands, but processed a lot of ash from Belgium, especially from Brussels and Antwerp. This Belgian garbage company was their launching customer, they were very patient while Inashco was scaling up. After scaling up the technology, you always get the question, how shall we expand the business. Since The Netherlands is only a small market, it meant that they had to go abroad. A second investment was done with the purpose of accelerating the business internationally. Also here, like in the previous case, the team was changed. That means that the original team which did a great job and brought the company to profitable levels in one and a half year, was removed and changed by some very talented persons with international business experience. Inashco developed very quickly, much like an internet startup. The market share in The Netherlands and Belgium is about 90% and that is a lot. If you process all that waste and get the metals out of it, which is quite a value. Plus, once you get the (heavy) metals out of the ash, the remaining ash can be used as building material. The business model of Inashco was not to sell machinery, but really buying and processing the ash. This was done not just because this would give them a steady flow of revenue, but also to protect against copycats.

My role in the process was supervisor about the strategy and involved in the deal brokering with Fondel, as well as recruiting new management staff members, Ugly Duck Ventures operated in this specific case more as a business consultant, we were not able to get shares in this company. Some of the lessons learned in this case study are the fact that emerging markets are very attractive to get a good market share in, that allows for really fast growing businesses. Also that going abroad for this company needed to be done at the right time. The Netherlands with its port of Rotterdam proved to be just the perfect place to be located for supplying Inashco with ash. Internationalization only had to occur after the market was saturated with their product. At the moment several facilities, each of which can process up to 100 tonnes of ash per hour. It is important to mention that Inashco is a company that develops its technology. For now the focus is on metals, but in the future, the goal is not to have to have incinerators at all and sort out all kind of plastics, paper and so on removing the need to burn anything. The new idea of Inashco is to process the old slagheaps of metal mines in Eastern Europe and Russia, in order to extract the metals from the slag.

Nerida Biopolymers

The third case study is again about waste, and actually could be around the question: does waste exist? The innovation of this company is based on wastewater treatment technology. In the Dutch city of Delft, the company Royal Haskoning developed a new wastewater treatment technology some time ago, around 10 years ago. And the first of these Nerida's, that is how they are called, are getting into operation. A Nerida installation is different from a traditional wastewater treatment installation, a Nerida is much smaller and simpler, less investments required and more cost effective. It is a commercial success for Royal Haskoning, they are selling it all over the world. In Europe, the Nerida is more of a replacement market, but for other countries it is something new and useful, markets like Brazil, India, China and so on. The first Nerida installation became active in 2012, so it is a rather recent innovation. The innovation here is the when you treat wastewater, you will have sludge. This sludge contains a lot of high value biopolymers, which Nerida's process into bioplastics. Most of the biopolymers that Nerida's produce are sugar based polymers, one example of that is the so called alginate. This polymer has a long chain and at the moment it is usually extracted from seaweed and you can find it often in food. The current volume of the world market for alginate is about 40.000 tonnes, but if you look at wastewater extraction, a small Nerida treatment plant already produces 1200 tonnes of alginate. We calculated that a large water treatment plant will produce as much as the current world market volume. As you can imagine, with so much potential extra production, Royal Haskoning is thinking

about what to do with so much extra alginate, which extra potential applications for it can be considered. Some of the ideas have to do with the food sector, medicine or thickeners. Dentists also use it and it can be found in paper textiles. Collecting it from the wastewater will be a massive cost advantage over collecting from seaweed.

We as Ugly Duck are constantly contacting companies with the question can you use it? Officially alginate collected from wastewater sludge cannot be used as food or in medicine. To be honest, it also stinks a little bit. We are looking this year if we can develop a new extraction method. The main challenge is to find new applications. This is potential a game changer for this polymer. It has a very high value due to its low supply. Large chemical companies like Dow Chemicals have always neglected this alginate molecule, because of its limited offer. But now, with this new invention you get the appropriate volumes and now the creativity is really starting and the Technical University in Delft is mobilizing every faculty in order to find applications, from the aerospace department to the mechanical and civil engineers, you name it. From this round, 20 or 30 new applications are found and the most exciting of these are nanocomposite materials. Due to patents being applied for it at the moment, I cannot go into details. Suffice to say that biopolymers have many very interesting characteristics. You can make it flexible or hard, for example for shells or teeth. In the lab we are playing with it, you can make plastics for example, or we try to use clay particles as fillers and suddenly we see that an extremely strong layered structure appears. It is not some weird science fiction, because nature is doing it in the same way and we have just begun to understand these processes.

The first product we try to bring to the market is a concrete hardener. The first months of concrete is crucial for its final strength. If we add a tiny alginate coating, that will keep the water in the concrete and you will get much better concrete. It is a proven principle, which means that it works in a lab, so we are now in the process of scaling up the stuff. The process of creating this coating is very easy. We take one bag of alginate and two bags of clay. We mix it together with the concrete and it works. That's all. As Ugly Duck ventures, we are looking at this case. It appears as if we are allowed to build a company and create a spin-out. The Netherlands as a market is way too small, we are all the time looking for international companies to partner with and international buyers. We are considering to move the new to be established company to Brazil, it has a lot of potential in terms of sugar crops, maize and other biomass that consists of alginate, but we don't know yet if we are going to do it finally. First we decided to focus on the wastewater treatment, because the waterworks get nervous. They got an innovation award a year ago or so and the

authorities expect returns. So, you can imagine there is some pressure from them to get onto the market.

Some of the lessons learned from this case are reasons to stay in The Netherlands. Even though the country is small, it is strong in water technology. There are a lot of research institutes that focus on water in different parts of the country. Then, the mother company Royal Haskoning DHV is located in the Netherlands, but it has connections all over the globe. In such an environment, it is useful to stay. Unlike the first case of KIOR, for this technology it is much more useful to stay in the Netherlands, and develop together with Royal Haskoning DHV and research institutes new ventures. In this alginate case, it shows once again how attractive by-products are. We also learned a lot from cross-overs. If you have water engineers and put them together with chemists and aerospace engineers, you get a lot of new and creative ideas. And these lead to innovations. Also this is an experiment of LEAN business development for us. Normally spoken you make a business plan, contact investors, build the business and develop the product or service and then sell it. We are doing it differently in this case, we contact potential customers and try to involve them in our value chains, and develop the business based on that. This is a big difference in way of thinking, much more a customer driven approach.

Conclusions – Lessons learned

I mentioned before that I don't see myself as a scientist, but instead as a practical guy, combining things, and make them work. When having a look at the lessons learned from these cases, I can mention the following: First of all, we developed a way how to make inventions visible. Inventions normally spoken appear at universities, research institutes, large companies, but often somewhere on a shelf, probably patented, but not really being used, because they don't fit very well with the strategy of that particular organization. Technology is important, because otherwise you will not get innovations, but entrepreneurship certainly too, otherwise many innovations will remain on the shelf and will not be used at all. Smart partnerships therefore are the key to developing more innovations. The next question that always pops up is about how to expand the business, and we found that the answer to that is the business ecosystem. To describe it in brief, firstly you need universities, they are a source of knowledge and talent. Secondly, big companies, as we at Ugly Duck are looking for inventions that lay idle. But not just that, large businesses are the ideal launching customers. Thirdly research organizations: it is important to have these close by, as you are able to make deals with them, to do something for each other, especially when there is no transfer of

cash involved, which is important at the start of the new company. In the fourth place, access to funding. It is really important to be in an ecosystem for that, as it is attractive for potential investors to meet a critical mass of business opportunities.

Then, a bit about the location of start-up companies: It is always important to ask the question, where it is best to stay? The answer to this question depends on the stage the start-up is in. In the first development phase, which I would call they idea development & research phase, it is most important to be close to the place where ideas are generated. That means that it is best to stay close to research institutes and universities and at place where there is entrepreneurship support. In the second phase, the business development phase, it is all about the networks and partnerships. Consequently, start-ups move to places with ample availability of funding and/or specialised networks of similar type of businesses. For example the first case study with the biofuels, that company moved to Houston where several pilot plants were available. In the third phase, that of the actual product launch, it is most attractive to be in the place where the largest supply of potential customers is available. This doesn't necessary have to be the largest market or most promising in terms of growth. In the fourth stage of start-up, the growth phase, then it becomes attractive to be located in large attractive markets and use the experience gained by working with the first launching customers, to better operate on these markets.

And finally, about ownership of the start-up companies, it is often the case with high-tech entrepreneurs that investors are in the lead, maybe not in the very beginning, but after the second, third investment round, the founders of the company will lose power. That is because these businesses are very capital intensive and investors are going to want something in return, namely a say in the decisions that are made in the company up to the point where they will maybe even change the team. For other types of start-ups, which I would call low tech, this doesn't have to be the case. Typical low-tech start-ups are industrial design companies, internet, IT related businesses and such. These require less investment and consequently, the original entrepreneurs usually stay in power. Another difference is that these low-tech start-ups are often different in scale, many of them stay local or regional and their business ideas have a short time to market. The high tech start-ups with disruptive innovations require a much longer time to the market and are usually global from the beginning. Maybe these high-tech start-ups are less than 5 percent of the start-ups, but because of their disruptive and scalable nature, they can grow very large and sometimes also very quickly. That is why my conclusion today is: A serious technology entrepreneur thinks and acts always globally.

Keynote speech 2016: Cleantech Region Stedendriehoek

Ir. Andries Heidema

Major, City of Deventer

Ladies and gentlemen,

Here we are, at the third Regional Innovation & Entrepreneur Conference at Saxion. I was asked if I would like to contribute in some way. As decisions go, this was an easy one to make! Aside from the obvious honour of presenting this kick-off, I quickly spotted various reasons to answer this request with a resounding YES.

It just so happens that innovation and entrepreneurship are the very elements that make our Cleantech Stedendriehoek Region so successful. This is where government, industry, education & research have joined forces. A place of reinforcing each other, with a common goal and challenge. I invite you to journey with me to and around the Cleantech Region. A journey we embarked on some three years ago. And who knows, maybe you will stay on board. I'd like that.

The Stedendriehoek is what we Dutch call the area including and between the cities of Apeldoorn, Deventer and Zutphen. Beautiful cities, green fields, De IJssel river, Veluwe, Salland, there's too much to list. But lacking one dominant identity, there was not a single distinctive feature. We also lacked a strong economic profile. In fact, we only excelled at being average. This wasn't all bad though, as it also meant that the economy was less prone to cyclical fluctuations. We were, and still are, quite resilient. But that does little to help profile yourself as a region. We steadily continued our search. We all felt that we needed to make our strong and promising connection visible.

We intensified this search by collaborating within the Strategic Board Stedendriehoek. The Board partners from industry, government and knowledge institutes together made every effort to advance the social-economic development of our region. And this collaboration taught us that we had to view our region

differently. No more looking towards a specific sector, but look across all of them, to find that one element that proved to unite us all. Cleantech!

Cleantech is deeply rooted in our region. Our region has an above average number of citizen initiatives when it comes to sustainability, such as energy corporations. Companies here stand out by making economical use of raw resources and energy. There is also plenty of attention for product lifecycles and making production processes more sustainable. As for government, we agreed several years ago that we aim to be energy neutral by 2030 at the latest. So, in our search for our own identity, everything suddenly just clicked. We are the Cleantech Region, and this focus sets us apart from other regions that tend to focus more on a single industry (food, health care, HTSM...).

The triple helix collaboration in the Cleantech Region is crucial to realise our Cleantech ambitions. And the great thing is... this isn't a closed collaboration. We actively try to connect with local citizen initiatives in the innovation regions around us.

To us, as Stedendriehoek, cleantech means doing more with less! And this has a clear benefit for the various partners in the region.

We achieve greater revenues and create more jobs with less environmental impact. Our foundation is a circular economy. Inside this circular economy, products and materials get re-used and raw resources retain their value. This creates opportunities for entrepreneurs: more cooperation across the chain, innovation, less resource consumption and less waste. And as a result, less costs. We need more knowledge to make this all happen. And if we're lacking that knowledge, we have to find ways to attain it. That's where knowledge & research institutes like Saxion come into the picture. Aside from practical objections, rules often get in the way of innovative concepts. Government bodies like cities and provinces can play a part in how these rules are applied. In short, in the Stedendriehoek we took the initiative to join forces and collaborate with Cleantech as our uniting theme.

Everyone contributes. Districts and provinces create the opportunities and assist wherever they can. Universities and colleges perform research for one or more interested companies and train the right people. The companies apply circular principles as best they can. This combining of forces truly enables the entrepreneurs. They get to do more with less. And in turn that's what draws new companies to settle in the region: both existing companies and startups. They choose to work in a region with an appealing business climate and a beautiful living environment. In other words, the Cleantech Region.

And Cleantech proves to be a fine choice. We recently investigated public support for cleantech in the region. Research showed that after explaining what it is, some 70% of Cleantech Region inhabitants found it to be a fitting profile. In other words, we're on the right track!

And that's hardly a surprise, as we have some of the most amazing Cleantech companies here. For example, one eye-catching, famous company is Auping. They opened new production facilities in Deventer last year that fully use the cradle-to-cradle design. And in Zutphen we now have the Cleantech Center, the leading knowledge institute in the eastern part of the Netherlands when it comes to Cleantech. It's a shining example of connecting entrepreneurs to young talent, finding ways to make their products and company processes even more sustainable.

Another example, a very recent one at that, is the grand opening of AREA055 in the former Zwitsal building in Apeldoorn. It's an open innovation centre where the Apeldoorn Cleantech companies, education institutes, Platform Techniek, healthcare players (labour participation), government and citizens work together under one roof. We're also looking into setting up an open innovation centre in Deventer on the AkzoNobel terrain. Again this will involve exciting partnerships. In this case, between the Overijssel province, the city of Amsterdam, Restructuring Company Overijssel and Oost NV.

And there are countless more examples. I'd like to tell you about all of them, as I am delighted with all the energy and drive we have in our Cleantech Region. Citizens and businesses, education institutes and governments. We're moving at full speed!

If you are interested in learning more about this, then please attend the Cleantech Tomorrow congress in Almen on April 5th. We are organising excursions to Cleantech companies and Cleantech 'battles' where entrepreneurs and students work together to create environmental-friendly solutions to relevant challenges. And we host international speakers with expert knowledge about circular economy. I am happy to invite you!

Let me conclude by stating our specific ambitions: by 2020, our Cleantech Region will have:

- 4000 new, clean-tech related jobs and a corresponding revenue/GRP growth (+50%)
- 200,000 tonnes less CO2 emissions (-10%)
- 20,000 tonnes less household waste per year (-33%).

In other words: *more with less*!

Keynote speech 2016: The Cleantech concept in a regional setting

Willem Poterman

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In our region, “De Stedendriehoek” (Cities in the Triangle – Apeldoorn – Deventer - Zutphen) there is a close cooperation between Cleantech organizations: industry, education institutes and local governments in the areas of Natural Resources, Energy Transition, Environment, Biobased Production and Agrofood. Started over 2 years ago it became a close collaboration between 12 educational institutes, 240 students, 115 companies and the local governments in this relative small triangle. “De Stedendriehoek” is an area full of innovation and also bottom-up initiatives from organizations and regional citizens who care about sustainability and take their responsibility. One of these local initiatives is the Deventer Energy Cooperative, driven by local citizens focusing on generating clean energy for their members and of course they participate and drive Cleantech projects as well.

Unlocking the circular economy potential

With up to 50 billion connected devices predicted by 2020, a pervasive digital transformation is reshaping the economy. Will this ‘fourth industrial revolution’ lead to an acceleration of the extractive, ‘linear’ economy of today, or will it enable the transition towards a society in which value creation is increasingly decoupled from finite resource consumption?

A new report, Intelligent Assets: Unlocking the circular economy potential, finds that pairing circular economy principles with the information generated by intelligent devices creates a fertile ground for innovation that could enable this decoupling, and lead to broad social benefits. The report was produced by the World Economic Forum and the Ellen MacArthur Foundation as part of Project MainStream, a global, multi-industry initiative that aims to accelerate business-

driven innovations to help scale the circular economy. In order to accelerate these business-driven innovation we need to come up with "new" clever business models and the usage of exponential technologies and support local industry in implementing these processes.

Engine of our (local) Economy – the right business model

Many existing business models assume vital (non-financial resources) i.e. natural, human and/or social capital are in virtual limitless supply. But we need new business models that contribute to the regeneration & restoration of these resources. Creating a new business model starts with 3 basic questions to be answered:

1. Your WHY (why do you do what you do, WHAT is your purpose)
2. Understand how the environment works. What is it that society (people) really want, what are their "Gains" and "Pains" and how are you going to help them.
3. Make sure that you validate the value proposition assumptions from your new business model. Test the model, again and again.

A few examples of new and successful business model that do things completely different are:

- Uber – offering taxi services, but don't have drivers and don't own cars
- Facebook – a huge publishing company, but … they don't create any content
- AliExpress – global retailer with zero stock
- Airbnb – a worldwide accommodations leader but … they do not own property

And besides creating new business models these companies are also masters in implementing these business models based on exponential technologies, technologies where power/speed are doubling annually and cost is dropping in half every year as well.

Like 3D-printing, Artificial Intelligence, Robotics, synthetic biology, nanotechnology ... and very often these technologies are disruptive technologies meaning that they can create new markets and disrupt existing ones. Look at the examples for Uber and Facebook etc. Personally I belief this will also happen to the big energy companies, which we don't need any more in the near future as the cost of solar panels is dropping exponentially, the efficiency increasing exponentially

and as a result most of the energy will be generated where and when it's needed, nearly for free.

We will see similar disruptions in other areas. AI and Big Data offer opportunities where you currently hire lawyers and consultants for and the blockchain has the potential to replace accountants and notaries. And … banks as well.

"De Gasfabriek"

In "De Stedendriehoek" we launched a new initiative in October 2015, @DEGasfabriek, where we aim to boost local (new) business development by connecting existing companies, start-ups and student entrepreneurs. Our approach is based on the fact that we think existing business is not able to really innovate. Their "innovation" is based on making existing things better/cheaper/faster, incremental innovation based on the same business model they have been using for decades. But start-ups and student entrepreneurs, without any old fashioned business heritage are able to think outside the box creating new (local) business opportunities. The basic idea behind @DEGasfabriek is to connect existing businesses/corporates with the entrepreneurs, where the entrepreneurs are allowed to "use" the resources from the existing business (launching customers, existing channels and other resources) to test their new business ideas and existing business/corporates are able to grow their future local business in close cooperation with the entrepreneurs.

Future business success requires GameChangers, and at @DEGasfabriek we facilitate start-ups and students to cause the change and challenge corporates to join the game. An initiative where we cooperate with local government, Cleantech, educational institutions and existing companies.

What are the effects of the sanctions between Russia and the European Union for the industry and agriculture in the region of Twente?

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Abstract: Since 2014 the EU and Russia have put in place a set of sanctions which limit trade between each other. In this study, the authors have found no serious effects of the sanctions on the regional economy of the region Twente. Some individual businesses became bankrupt, but most interviewed businesses reported that they were able to shift their sales to other markets.

Keywords: Sanctions, Russia, Twente, economic policy

1 Introduction

This article deals with the consequences of the current economic sanctions between the EU and Russia for companies in the region Twente, in The Netherlands. The authors have investigated the regional effects on export of Dutch companies to Russia. The article starts with a brief description of the region and its economy, followed by the effects of the sanctions.

1.1 Short description of modern Twente

Twente is a region which is located in the province of Overijssel, The Netherlands. The region has a size of about 1.504 Km^2 and about 627.000 inhabitants. The region has grown rapidly during the industrial age because of the production of textile (Bazen & Bijleveld, 2012).

The three largest cities in the region are Enschede with 158.331 inhabitants, Hengelo with 81.074 inhabitants and Almelo 72.438 inhabitants. There are 2 major motorways across Twente, the A1 (Amsterdam to Germany) and the A35 (Zwolle to Enschede and further to Germany). Besides the highway there is a bicycle highway F35 (Nijverdal – Enschede) and there are several railroads of which the most important ones are from Enschede to Zwolle or Apeldoorn (these split at Wierden to go their own separate ways).

In terms of higher education there is the University of Twente and Saxion University of Applied Sciences, both in Enschede. Then, the Vocational Schools ROC Twente (General vocational education) and AOC (Agricultural education). Besides these there are a number of primary and middle schools.

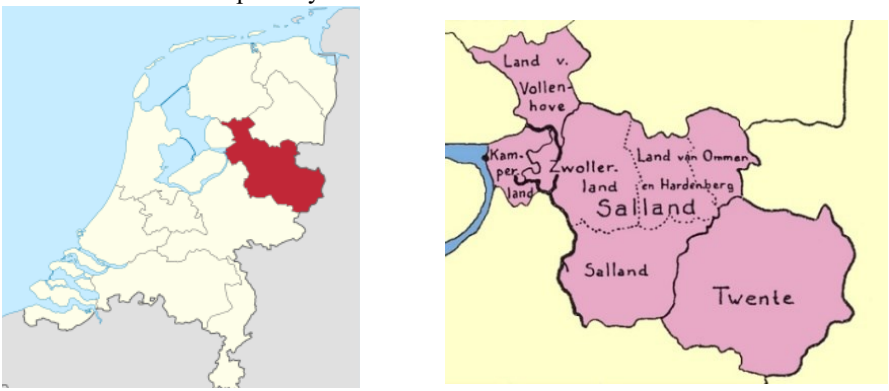

Figure 1
Location of Twente in The Netherlands

1.2 Comparison between Twente and the Netherlands Import / Export

The average trade balance of Twente is significantly more positive than that of The Netherlands. The numbers are quite volatile, but in general steadily positive, however there appears to be a slight falling tendency in 2015. The explanation for the rather strong positive trade balance in Twente is that it is an industrial region, close to the border, with many companies supplying large companies in Germany (Bazen & Bijleveld, 2012).

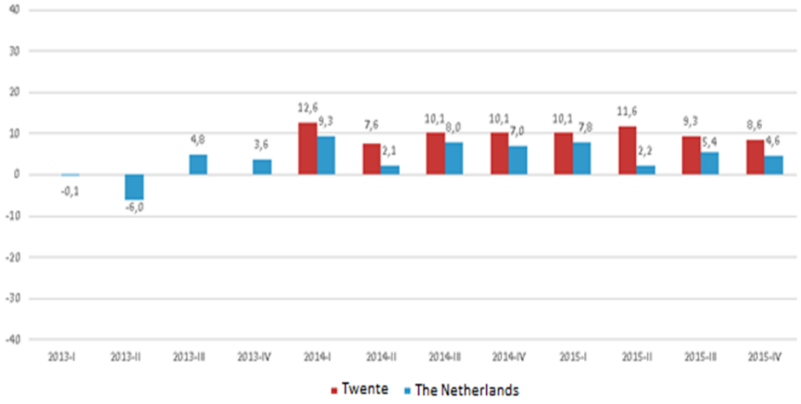

Figure 2
Trade Balance of Twente and the The Netherlands, 2013 – 2015 (Kennispunt Twente, 2016)

1.3 Development of company turnover rates

The Dutch Chamber of Commerce asks their members every quarter whether they have seen an increase, decrease or stable development of their turnover. The outcomes are then calculated in such way that the percentage of companies that report a decrease are subtracted from the percentage of companies that report an increase. The resulting figure is a sort of thermometer for growth.

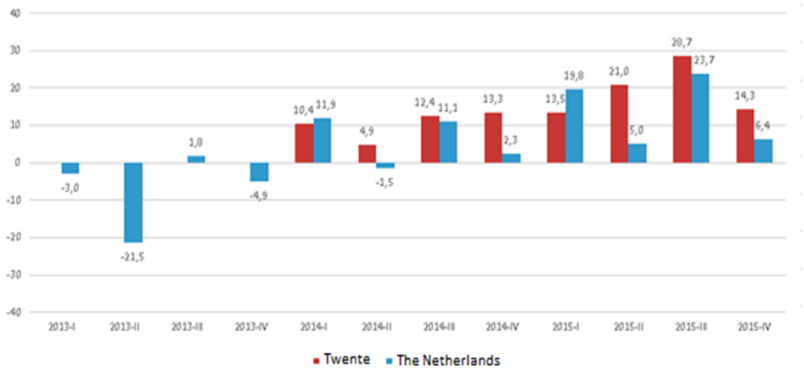

Figure 3
Net percentage of companies experiencing growth in turnover rates in Twente and The Netherlands, 2013 – 2015 (Kennispunt Twente, 2016)

1.4 Employment rate

In terms of percentage of employment in Twente, more people than average in The Netherlands are working in the industrial and agricultural sector. (Twente: 15,2% for industry and 3,2% for agriculture, Netherlands average: respectively 10,8% and 2,7%). Even though the employment in agriculture is quite low, the high productivity of these companies make it one of the strong exporting sectors in the country and therefore a significant economic sector for the country. In Industry, Twente has a higher than average percentage of jobs and companies in the High Tech Systems and Materials cluster, many of these are spin-offs from the University of Twente (Bazen & Bijleveld, 2012).

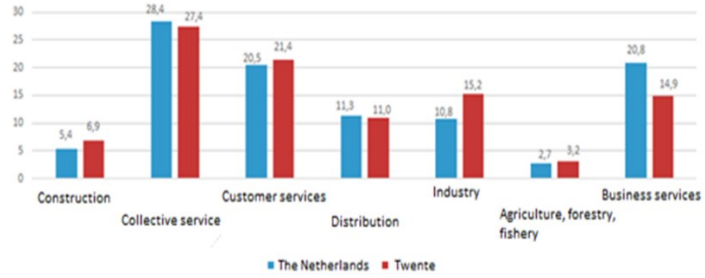

Figure 4
Employment structure in Twente (Kennispunt Twente, 2016)

1.5 Growth companies by sector

In the period 2013 - 2014 the number of companies in the industrial sector grew by 0,6% compared to the period 2012 - 2013. However, the agricultural sector decreased by 0,5%. The low growth rate in industry is usually contributed to outsourcing of production and computerization, and the decline in the agricultural sector to upscaling of farms.

Figure 5
Employment growth in the region Twente (Kennispunt Twente, 2016)

2 Trade

In this section some characteristics of the trade between The Netherlands and Russia and Twente and Russia are presented.

2.1 Trade relations between The Netherlands and Russia

There is a significant trade relation between The Netherlands and Russia. Russia is one of its top-ten trading partners. In figure 6, the development of the export from The Netherlands to Russia can be seen. From an all-time high in 2012, there is a notable decrease of around 40% in 2015. From the already published preliminary numbers of January 2016, it looks like the falling trend is continuing. Based on this number and the occurring trends, a number of prognoses for 2016 have been calculated (among others based on the expected trends in the world oil price, and on the trends of the past years, leading to a low, medium and high scenario).

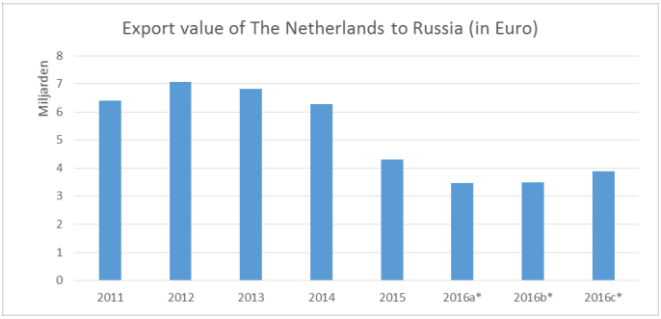

Figure 6
Development of export from the Netherlands to Russia (CBS, 2016)

Figure 7 shows the strong imbalance between the value of imports and exports in the trade between The Netherlands and Russia. Even though both numbers have fallen over the last couple of years, the imports from Russia to The Netherlands are still significantly higher. Given the current weak exchange rate of the Ruble, it is not expected that exports from The Netherlands to Russia will significantly increase, even if current sanctions would be lifted.

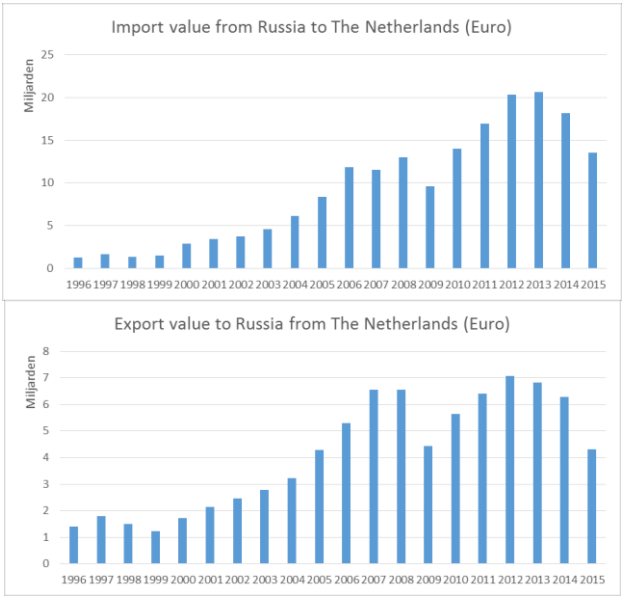

Figure 7
Long term development of import and export between Russia and The Netherland (CBS, 2016)

2.2 Trade relations between Twente and Russia

There is no direct way to calculate the exact export figures between the Twente region and the Netherlands. Based on the Gross Regional Product of Twente, the general employment structure in the different economic sectors and the total export of the region, a rather accurate estimation can be made about the volume of export of the region to Russia. It is clear that just like in the Netherlands, the volume of export to Russia has fallen extensively, and because of the relatively strong representation in Twente of sectors with more than average exports, business in the region is affected relatively strongly.

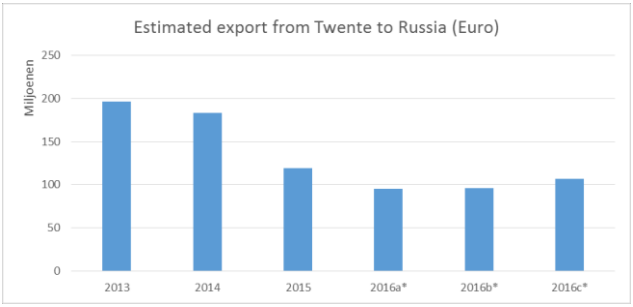

Figure 8
Estimated export from Twente to Russia (CBS, 2016)

3 Sanctions

In March 2014, the EU and the USA introduced the first sanctions against Russia. The EU did this by imposing travel restrictions and freezing assets of 21 Russian and Ukrainian diplomats (NU.nl/ANP, 2014; Council Decision 2014/145/CFSP, 2014)

In April 2014, these sanctions were followed up by a second round of sanctions. These sanctions contained amongst others assets freezing, visa or travel ban and an arms embargo (Council of the European Union Press Office, 2014). In July 2014, the EU expanded its sanctions to several other individuals and entities. (Council Decision 2014/508/CFSP, 2014) (Council Implementing Regulation (EU) No 810/2014, 2014)

The new sanctions included that the EU stopped providing European loans for Russian projects (ANP, 2014). At the moment there are 4 kinds of sanctions active

against Russia: capital market restrictions against a number of Russian state-owned banks and 8 large Russian state companies in the oil and defence sectors, an arms embargo (existing contracts are excluded), an export ban on goods and technology for dual-use to mixed end-users, and an export ban on certain equipment, technology and services for deep-water oil exploration and production, arctic oil exploration and shale oil (Rijksdienst voor Ondernemend Nederland, s.d.). All sanctions against Russia can be found on the website of Eur-Lex (Council Regulation (EU) No 883/2014, 2014). In June 2015 the sanctions has been extended until 31 July 2016 (ANP, 2015).

The Russian Federation itself has also introduced sanctions against the EU. The most important of these sanctions are: on the 25th of July 2014 Russia stopped allowing imports of fruit and vegetables from Poland; on the 7th of August that same year, Russia banned food products of the 28 member states of the EU, the USA, Australia, Canada and Norway; and in October 2014 Russia stopped the import of animal fats and certain meat products from the EU (NU.nl, 2015).

3.1 Influence of the sanctions on companies in Twente

Several companies in Twente with links to Russia were asked about the effect of the sanctions on their business. One of the interviewed companies for example, made 75% of their turnover from business with Russian companies. Even though this specific company did not fall under the sanctioned products / sectors as written above, after the sanctions were imposed, they were checked by customs of the EU and Russia, leading to extensive paperwork and bureaucracy, significantly slowing down operations, at least in the first stages of the sanctions.

For some interviewed companies, after the sanctions the percentage of turnover made in Russia decreased, however this cannot be fully blamed on the sanctions, as the competition of Russian and Chinese companies increased among others because of the weak exchange rate of the Ruble. Because of the disappearance of European products because of the sanctions and/or there less competitive position on the Russian market, Russia has adopted an import substitution policy. One of the examples of this is greenhouse technology. Russian greenhouse cultivation has increased since mid-2014, among others because of import of technology from the Netherlands since the import of the agricultural products themselves is no longer possible (Koster, 2015). All of this makes it much harder for Dutch entrepreneurs to enter the Russian market or remain competitive.

Some other companies said that they did not notice any influence of the sanctions on the revenue, and some other companies refused to release any information.

4 Conclusion

The sanctions between Russia and the EU certainly had influence on companies in Twente. As indicated, the agricultural and industry sector are relatively important in Twente, and those sectors did suffer from the sanctions, if not directly, then still by the extra paperwork and procedures that came with them, at least in the beginning.

It is very clear from the data that export volumes have sharply decreased, by over 40% the last couple of years. This is not just because of the sanctions, but also because of the weak Ruble, which makes European imports less attractive. For entrepreneurs, it became more difficult to do business with Russia or even to return to Russia if the sanctions would be lifted. This is because the Russian government actively pursued an import substitution policy and replaced the European products with domestic products or products from somewhere else than Europe. The weak exchange rate of the Ruble to the Euro, will keep domestic products more attractive than EU imports.

When having a look at the companies in the region Twente, it becomes clear that in individual cases some Small and Medium Sized Enterprises went bankrupt because of the sanctions, but these are exceptions. As can be seen in figure 2, the international trade balance for Twente remains strongly positive, which provides evidence that most companies shifted their target markets to different countries.

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Young Generation of Russians: perception of entrepreneurship

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Abstract: The authors put forward a hypothesis about absence of fear among modern generation's young people that is connected with impossibility of business in Russia. On the base of the hypothesis authors have conducted a research by projective method within 156 respondents, studying at high school, on the base of which has been conclusion about a necessity of large-scale research in this field received.

Keywords: modern business, young generation, projective method, research, perception, Russia

1 Introduction

The research presented in this article has its long background. There is a module in most Russian educational programmes in the field in Economics and Management called "Introduction into Future Profession" where students can get a glance at what they are going to do after their university studies. Course final project given by article authors is about student's "dream employer". So it is a chance for 17- 18 year

old to think of the work they really would like to have. Unfortunately, during last 10 years students final presentations were about P&G, Unilever, Nike, BMW and other big and famous corporations. And only 3 projects of the dozens were on students' possible entrepreneurial activities or ambitions.

"Starting business in Russia is getting increasingly scary"[1], reads the headline of an article recently published in the Russian newspaper *Vedomosti*. According to Amway Global Entrepreneurship Report 2015, [2] 77% of Russians are afraid of starting their own business, and it is much higher than Europe's similar indicator of 69%. Unfortunately, since the previous research[3], the percentage of those who are scared of opening their business is up 6%.

It is interesting to note that at present, teaching entrepreneurship in Russia is mainly informal. Formal education is currently represented by the programmes of additional education "Master of business administration" and programme "Economics of entrepreneurship." In addition, few universities and colleges teach specialized courses in entrepreneurship or basic entrepreneurship[4].

2 Methodology

So the research aim was to understand inner motives of avoiding the start of the new business by Russian young generation. To get accurate results authors used one of the most complicated methods of surveying called non-standardized closed questionnaire. For the purposes of the research, we developed a questionnaire (see Annex 1) to be filled out by participants and used the sentence completion method.

This research is designed to focus on young audience (from 17 to 23 years old) studying in an upscale school of economics in a capital city, based on the hypothesis that the young generation does not have serious fears and believes that doing business in Russia is possible and necessary. It was also interesting to find out what the respondents really think of entrepreneurship education and changes in the attitude to education. In addition, the authors chose to use a non-standardised closed

[1] Vedomosti, No. 4004 of 29.01.2016, A. Gordeev "Scary Business"

[2] Amway Global Entrepreneurship Report, 2015: http://globalnewsassets.amway.com/501484/ager_2015_report.pdf?r=1600

[3] Amway Global Entrepreneurship Report, 2013: https://assets1.bywebtrain.com/501522/2013_amway_global_entrepreneurship_report_1.pdf?r=1920

[4] *Higher Education in Russia*, 2015, No.11, Yu. Rubin *"Higher entrepreneurial education in Russia – problem diagnostics"*

questionnaire for the interview, and such questionnaire is used to study the respondents' deep motives.

It helps to overcome the unwillingness of those surveyed to discuss their feelings through special techniques, which almost eliminate the dependency of responses on the interviewees' conscience and their willingness not to speak openly. The emphasis in such interviewing techniques known as projection methods is made on hiding the true subject of research by using hidden incentives.

Projective method is the term used to describe the questionnaire that contains hidden incentives, which make respondents rely on their own emotions, needs, motives, preferences and values when they formulate their responses.

Normally, the method implies using standard incentivising questions that can be answered in a very informal manner. That is why the technique is referred to as a "non-standardised closed interview." The main assumption of the technique is that the form used by a person to answer a non-standard incentive question helps finding a key for understanding how the person perceives the example of the research and what is their true attitude to it.[5]

The advantage of the sentence completion method as compared to the association word method is that the respondents can be offered a clearer incentivising motive. Students had to finish sentences without thinking and using not more than 5 words. The statements were:

1. Entrepreneurship is _____
2. The obstacles to the opening of your own business are_____
3. To open a business in Russia you need_____
4. The most attractive country for entrepreneurship is_____
5. Special education for the entrepreneur_____

Statistical sampling of the dataset consisted of 3 main groups:

- Bachelor in Management first year students (Freshmen)
- Bachelor in Management last year students (Undergraduates)
- Master students

The survey was conducted over the period 1 December 2015 to 15 February 2016.Authors collected around 150 survey forms and came to very interesting results, as is shown in the paragraph below.

[5] G. Churchill *Marketing research*, G. Churchill, T. Brown, translation from English edited by G.L. Bagiev, 5th edition, -Spb.: Peter, 2007. p.254

3 Findings

In this paragraph, the findings of the research are debated. After statistical parameters of the sample, the results of the questionnaire is discussed in detail. figure 1 below, the statistical distribution of female and male participants are represented. In figure 2, the age-distribution of the sample is given.

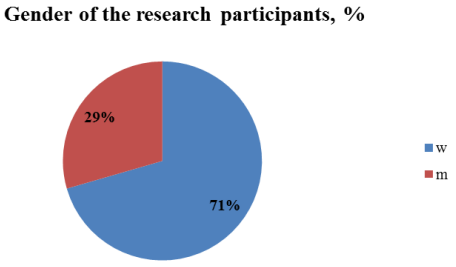

Figure 9
Gender of the research participants, %

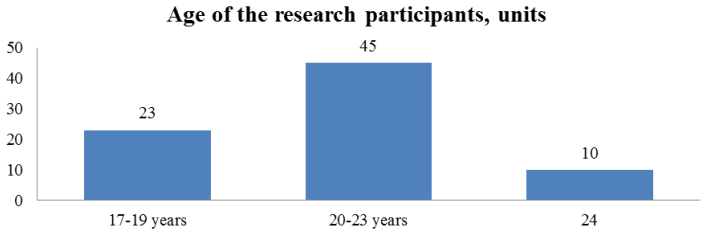

Figure 10
Age of the research participants, units

In the tables below, the results of the questionnaire are given in detail. Table 1 shows that the most popular answer is the equation of entrepreneurship with income and money, regardless of the respondents' name.

No.	Master's programme	Under-graduates	Freshmen	Total
1) development of definition	52	7	8	22
2) management	28	0	48	38
3) creativity	16	4	12	10
4) income/ profit/ money	48	0	31	44

Table 1
Understanding the concept of "entrepreneurship", (%)

Based on the above data, the following conclusion can be drawn: the young generation is aware that entrepreneurship leads to high earnings. It is also important to note that in most attempts to give a formal definition, the respondents mentioned that profit is the main aim. We believe it is natural that masters' students usually gave formal definitions, since they chose to study science. Bachelors' students tend to equate entrepreneurship with management, which is also quite understandable.

The next question was about obstacles to opening business. None of the respondents wrote that there are no obstacles, as is presented in table 2 below. As a rule, they listed several reasons. Young people believe that the most serious obstacle (demotivator) to opening their own business is the lack of seed capital (money). Legislation (obviously the fear is irrational, since nobody directly mentioned that legal framework prevents them from opening their own business) and competition were ranked second and third. Lack of knowledge was mentioned by only 10% of the respondents, and later 31% of young people stated that they did not need education or special knowledge. We reviewed the two groups of questionnaires and did not find any inconsistencies: these groups of respondents remain totally separate.

No.	Master's programme	Undergraduates	Freshmen	Total
1) lack of idea	12	14	100	10
2) no connections	12	0	0	4
3) no money	32	39	0	38
4) legislation	24	36	25	29
5) competition	28	21	24	24
6) fear, risk	24	11	4	13

Table 2
What is an obstacle to open business, (%)

As to the question regarding opening business in Russia, all the respondents unanimously answered that money is the key driver - 54%, and 31% mentioned connections. In the previous question, which did not contain the word "Russia" in it, only 4% remembered of connections, and the 4 percent were master's students (see table 3).

No.	Master's programme	Under-graduates	Freshmen	Total
1) money	56	50	56	54
2) formal answer regarding procedures	8	7	12	9
3) idea in place	12	21	16	17
4) personal characteristics	16	14	20	17
5) connections in place	36	25	32	31

Table 3
What is required for opening business in Russia, (%)

It is important to note that the young people from our sample believe that the US is the country with the most attractive climate for small and medium businesses (31%), and despite all the obstacles, 22% of them mentioned Russia in this regard, which could mean that with 1/5 of the respondents, desire to work prevails over fear and obstacles (see Table 4 below).

No.	Master's programme	Under-graduates	Freshmen	Total
1) did not think about it	8	0	4	4
2) with best taxes	4	4	0	3
3) Europe	24	0	40	35
4) USA	28	43	20	31
5) Russia	28	14	24	22
6) Japan	0	4	0	1
7) China	0	0	8	3

Table 4
What is the most attractive country to open a private business, (%)

In the hypothesis the opinion regarding the need in education for an entrepreneur split – with 28% answering “preferable” and 31% saying that education is “not necessary”. Among the top qualifications, the respondents listed business and management, and often referred to MBA programme as an example of such education, which, strictly speaking, is not quite accurate, but that is the association that the respondents had (see Table 5).

No.	Master's programme	Under-graduates	Freshmen	Total
1) business	24	25	16	22
2) management	4	7	12	8
3) finance	0	7	4	4
4) law	8	7	20	12
5) not necessary	20	32	40	31
6) preferably university degree	52	11	24	28

Table 5
Special education for an entrepreneur, (%)

4 Conclusion

In conclusion, it is important to note that no differences in the responses based on ages were identified. The research data are qualitative and reconnaissance by nature, and provide grounds for a further large-scale survey.

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5. Amway Global Entrepreneurship Report, 2013.

University Business Cooperation: Results of International Student Projects

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Abstract: Throughout Europe universities are opening up more and more to society, as part of the ideas of a "third mission of universities" suggested by Etzkowitz & Leydesdorff in their triple helix model. Part of this is the increasing attention for university – business relations and the emergence of more and more practical student business projects. Whereas the effects of such projects on the learning results of students are well researched, the effects of such projects on the companies appears to be under researched and fuzzy. This article is a case study about measuring the results of a yearly recurring international university – business student cooperation project. The project consists of students working together in international teams to solve a business problem for a company. This article provides a methodology and an attempt to measure the impact of such projects on companies.

Keywords: International business, project based education, international cooperation, university-business cooperation, impact study

1 Introduction

Companies and universities are increasingly working together (Pavlin, Kesting, & Baaken, 2016). Etzkowitz & Leydesdorff (2000) described this tendency with their Triple Helix Model, a model that was used in the development of the case study described in this article. University Business cooperation can take of course many shapes and forms, but in this study, the authors focus on university – business cooperation projects in the form of university – business student projects. In this particular form of cooperation, companies are using the knowledge and work of the students for solving their problems and/or creating new business opportunities. Universities on the other hand change their teaching models or sometimes even their curriculum to support these activities (Johnson, Johnson, & Smith, 2007). In a meta-analysis of studies dealing with the effects of face to face collaborative learning, Kyndt et al. (2013) found that the majority of studies pointed towards a positive effect of learning and results of especially face to face collaboration projects. The relation is still significant, even when controlled for culture (Western / non-Western). Even though the effects of university business cooperation in the form of student projects is well researched in terms of learning outcomes and results for participating students (Kyndt et al., 2013), the effects of such cooperation project for companies on the other hand are somewhat under researched. Even an extensive European Union report, written by Davey et al. (2011) about university – business cooperation contains only very limited information about the effects of this cooperation for businesses. Even for university staff with a large experience in university – business cooperation projects, still a significant amount of their time is spent on convincing companies to work with students. An example of this is the following quote from an interview with prof. Mikko Koria of Aalto Business School in Finland, with years of experience in university – business cooperation projects, in the Science – Business report of Edmondson et al. (2012):

> *”It takes a lot of work to convince companies they get benefits from working with students. I spend 20 to 30 per cent of my time setting up projects with companies”.*

This article is about a case study of a successful yearly university business student cooperation project, the so-called Autumn School. The Autumn School is an international program which provides a rich learning context for students from Russia and the Netherlands, in order to help them to execute an assignment for a Small and Medium Sized Company, preferably in the sphere of technology. The Autumn School is a collaboration between the World Trade Center Twente, Lomonosov Moscow State University and Saxion University of Applied Sciences. More about the program itself and the model as well as the learning effects for students in participating in this project can be found in previous work of the authors (Bazen & Petrova, 2013, 2014). Within the Autumn School, students from the Netherlands and Russia work together in a group of mixed nationalities, on an assignment of a company. The company can be either from Russia or from Western Europe and is looking for possibilities to expand or start operations in the other region. The assignment for the students is to do an in-depth analysis of either the Russian, or most important EU markets[6].

The first edition of the Autumn Business School took place in 2013. The main assignment was for a metal company from the Netherlands who wanted to start operations on the Russian market, the company already did some preliminary work and the students were asked to build further upon this. In 2014 the second edition took place, students developed a plan for a transportation materials producer from The Netherlands, to become active in Russia. The third edition took place in 2015 with three companies participating, one Dutch company that wished to go to Russia and two Russian companies that wanted to enter the European market .

Following the earlier mentioned observation that the effects of this specific type of university – business cooperation projects is well researched for learning effects on participating students, but under researched in terms of effects on companies, this study will describe and analyse the follow up from companies based on the recommendations of the students.

This study therefore contains a description of what the companies have learned, if the companies have taken any actions, and if so, which actions the companies have taken.

[6] See also: http://www.autumnbusinessschool.org

2 Research design and research methodology

The main question for this article is: "What value is added for companies by involving students in researching international business opportunities and advising in international business strategies?"

So far 5 companies participated in the Autumn Business School, over the period of three years. The authors invited all participating companies in the Autumn Business School project, as of 2016 for an in-depth interview. Four of the 5 companies agreed to have such an interview. Even though the number of companies is quite limited, the talks resulted in a deeper understanding of the usefulness of certain projects and what companies do expect from students and the results that were in it for them in the specific project that was done for them. As written above, this study revolves around the added value for companies to be involved in this type of university-business cooperation. Added value is defined as: new knowledge, new insights and newly created business opportunities for the participating company.

The information was collected by means of semi-structured interviews with the entrepreneur/owner of the company involved. The reason to use this method was that it may be not so clear what the exact added value was and it may need some additional questioning before the necessary information can be found. Since this study is somewhat exploratory, semi-structured interviews give the best possible opportunity to identify different types of added value. The themes of the interview questions were about whether new knowledge was generated, new insights were found, new opportunities were created and in general, how much the companies valued the entire project and its outcomes.

3 Results of the interviews

All interviewed companies indicated the work that was done for them by the students was helping to increase their knowledge of the market and gave them insight in the specific ways of doing business in these countries, for example:

> *Verhelderend is de hernieuwde vaststelling dat je je bewust moet zijn van cultuurverschillen omdat deze zakendoen beïnvloeden* [I realized again that I have to be aware of cultural differences that influence business]

> *Wij hebben inzicht gekregen in welke mogelijkheden er voor onze producten in de Russische markt zijn en hoe we in Rusland in praktijk het beste aan de slag zouden kunnen gaan* [We got insight in the opportunities for our product on the Russian market as well as how to start our operations there].

> *Our business is quite specific, we did some work on construction market related questions before and needed some more answers about the Russian market. One thing we surely understood is that how extremely important social capital is on the Russian market*.

Even though all companies reported to have gained valuable insights, when talking about the creation of actual business opportunities, the picture is a bit different. One company reported to be actively negotiating with two foreign partners, one company is in the stage of opening negotiations (the project helping this specific company finished only three months ago, which may explain the current stage) and two other companies indicated to have found no opportunities for now to sell their product. For example:

> *At the moment we focus on a different market, we have some concrete demand over there and since we are only a medium sized company, we can only do so much at a time.*

When asked for the overall results of the project for the companies and how they valued it, three of the four interviewed companies answered that they considered the project result very satisfactory, and one considered the results to be good.

On the topic of cooperating with students in this project, not all companies reported that they were always pleased. One company specifically reported that they were generally not happy with the behaviour of the students, which they considered to be rather unprofessional:

> *Ik vond de studenten gemiddeld maar matig enthousiast, met enkele uitzonderingen daargelaten. Veelal studentikoze houding voor wat betreft aandacht en opkomst bij bijeenkomsten en inzet van eigen talent* [I considered the students on average to be only little enthusiastic for the project, with a few notable exceptions. Often quite a strong adolescent behaviour in relation to attention during and showing up at meetings as well as little enthusiasm to use their talents to get the best out of it].

Another company reported more positive behaviour, as they were impressed by the ability of the students to operate so independently and deliver nonetheless useful results:

> *De studenten hebben veelal zelfstandig gewerkt en de samenwerking met Saxion is prima verlopen. Dat er op dit moment geen goede mogelijkheden zijn ligt aan de marktomstandigheden en kan niemand kwalijk genomen worden*. [The students mostly worked independently and the cooperation with Saxion worked fine. The fact that there are no good opportunities at this moment is because of the market circumstances and can't be blamed on anyone].

As far as recommendations for improvement of the project, three entrepreneurs suggested to have the final presentation face to face and not via Skype, as they considered the distance to be detrimental for the full understanding of the presentation. One company mentioned that they had also quite big problems in understanding the presentation at all, because of recurring technical issues with the connection.

All interviewed companies told that they would recommend colleagues to participate in this type of projects. Some companies were more outspoken about it than others, but in general the results were quite positive. One of the company remarked for example:

> *It is important to realize that it will take you as company also a significant amount of time to invest in this project. We have a very dynamic and busy environment, so we usually don't like to read big reports. I understood we should have paid more attention to details. This is what I would recommend others: If you participate, do it only if you can free up enough time. You will get something useful, but it is going to cost you time*.

Another company specifically added:

> *I liked the fact that I got two reports, from two different groups. One report was better than the other, but both consisted of valuable insights. This is what I like and would recommend to others: you will get different perspectives, which makes you think about your own assumptions*.

4 Conclusion and recommendations

As far as the companies are concerned, the cooperation with students in the Autumn School was successful. It gave them insight in their way of doing business, their cultural assumptions and helped to improve the cultural awareness. In terms of the creation of actual business opportunities, the picture is a bit more mixed. Companies who reported not to have gotten more opportunities, blamed it on the current bad economic circumstances in Russia, or bigger attractiveness of different markets. Others reported to be negotiating with partners abroad. Student behaviour during the project (1 company) and the non-face to face final presentations (3 companies) were mentioned as being of detrimental influence on the project.

One of the recommendations is to monitor the behaviour of the students in future projects and train them in business etiquette, in order to minimize potential disappointment for the client.

Another recommendation is to have the design of the future editions of the project in such way that the final presentation for the company is as much as possible face-to-face for the entire team.

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Expats in the Twente region; Personal experiences and future improvements

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Abstract: Relatively peripheral border regions are often seen as less attractive for high qualified temporary migrant workers (expats). Usually these region offer less possibilities for highly skilled migrants to find suitable work, because of the clustering of these types of jobs in core regions. Companies in more peripheral regions are thought to be less open for international experience and international cooperation. To test this assumption, several interviews with expats about their personal experiences and future improvement suggestions were held in order to get an overview of how expats feel working and living in Twente, a region which is located in the Eastern part of The Netherlands. The exploratory research findings were compared to a notable survey on expats conducted by HSBC Expat (HSBC Expat, 2015) to see whether or not the situation of expats in Twente is different than the findings of the HSBC survey for the entire Netherlands. This study reveals that there are no notable differences with the findings of the HSBC survey. Because the interviewed expats were all positive about their experiences working for companies in Twente, the future improvement suggestions were only minor. The expats did mention some small point of improvements but these points did not cause difficulties for them to stay and work in Twente.

Keywords: Expats, Twente region, interviewees, HSBC survey, comparable situation, managing diversity

1 Introduction

As a small trading country, the Netherlands has always felt the need to cooperate with foreign countries and therefore also the need for workers from abroad. The relative wealth and the relative tolerance of the people living in the Netherlands are two key components getting people to work in Holland (Lucassen & Penninx, 1994). Two relatively recent examples of this immigration of foreign workers in the Netherlands are the Turkish and Moroccan guest labourers (Prins, 1996). Because of this long experience and need for foreign workers, nowadays the Netherlands is known as being a very open country towards people from abroad. In a recent large survey conducted by HSBC Expat, 39 countries were researched based on their policy and attitude towards expats. The Netherlands was ranked 12th in this list, just behind Switzerland and Hong Kong (HSBC Expat, 2015). In this survey it is stated that most of the foreign workers in the Netherlands "head for the Randstad, a conurbation of just over 7 million people that includes the country's four largest cities – Amsterdam, Rotterdam, The Hague and Utrecht".

Because of this statement, curiosity has arisen if the picture that is painted in this survey about the Netherlands, also holds for the Twente region. Twente as a region is different in characteristics compared to the Randstad region, mentioned as the main destination for expats. It is a more peripheral and border region, without major attractive cities. The 2010 demographic data of the Central Bureau of Statistics shows that Twente had 623.432 inhabitants (Databank Twente, sd), not even one tenth of the Randstad region. Also, although the actual data suggests differently, figures, local and nationwide media are writing about Twente as being a region where 'brain drain' (high educated people leaving the region) is a concern for employers (Stichting Twente Index, 2011). These examples, combined with other economic developments, sketch an image of Twente as not being a favourable place for foreign employees to work or to find work. Because of this image one might argue that expats in the Twente region have a different view of their personal work and experiences than the average expat in the Netherlands.

To research if this argument is true, within semi-structured interviews among a number of expats working for companies in the Twente region we've identify their points of view on different aspects. Language, housing, social contacts and visa application are subjects that were discussed during these interviews. The main question that was used guide the interviews in the preferred direction was: "Which personal barriers do expats in the region Twente encounter within the companies that they work for and what future (improvement suggestions) do they have"?

2 Methodology

As mentioned above, the main question posed to write this article is: "Which personal barriers do expats in the region Twente encounter within the companies that they work for and what future improvement (suggestions) do they have"? By interviewing expats and researching literature studies we investigated whether or not expats in the Twente region confirm the picture that is painted about the Dutch expat situation in the Netherlands by the HSBC survey. The participating expats are from all over the world, from Russia, to Sudan, till South-Africa. It consists of both expats that have been working in the Netherlands for the last twenty years and expats that are here for less than a year.

The main source of information acquired by this study came from interviews. The number of participating expats to the semi-structured interviews was five (n=5), consisting of three female expats and two male expats. Two of them work in higher education, two in high-tech businesses and one for the government. Besides the interview we also consulted several other sources such as Expat Centre Twente and databases for general information. To make the construct experiences more specific the personal barriers (experiences) are defined as: "Language barriers, housing/accommodation barriers, social barriers, visa application barriers, governmental barriers and others. For the future (improvement suggestions) it is more difficult to create specific variables. We decided to leave this part of the interview as open as possible as there were no preconceptions about the answers that could have been expected here.

3 Findings

Since none of the participated expats were native Dutch speakers and because of all the expats have had an advanced level of English we did all the interviews in English and not in our mother language Dutch. The semi structured interviews did have a chronological order of subjects. Such as the basic barriers as language barriers, housing and accommodation barriers, social contact barriers, visa application barriers and governmental barriers. After the personal barriers we focused the interview on the development opportunities in general for the expat itself as well as the development opportunities in the company. And at the end of the interview we've tried to direct the interview to future improvement suggestion, for the companies and also for the expats. The findings are presented around a specific topic as is listed below.

3.1 Language

The language barriers was not a big obstacle because of the intermediate to advanced level of English of the Dutch people in general as well as the English level of the respondents. As one of the expats said: “Sometimes it was hard to translate all the forms by myself but most of the colleagues were able to translate some of the key words for me” or “The language was not too much a problem here in the Netherlands maybe because I understand Afrikaans. But English everyone speaks well enough”.

3.2 Housing/Accommodation

According to another expat the accommodation was much harder to arrange. “Organisation things such as accommodation were hard to find”. Sometimes the companies makes false promises to the expats for helping them with the accommodation. They did find accommodation, but not in a proper way. The most common way that the company was helping was to give some time to settle while starting to work for the company.

3.3 Social

In general, establishing contacts, was the hardest aspects in the initial phase of the staying. Some remarks of the respondents were: “Of course you have some good contact with your colleagues but it is not a social event” or “Dutch people are quite open in general but not in making the first move”. These quotes are quite similar to the observations in the HSBC expat survey where, for example one of the respondents stated “The people in the big cities are used to dealing with expats, but in the countryside you will always be that stranger from abroad”. As the Randstad region includes all these ‘big cities’ the Twente region serves as the ‘countryside’ in this example.

3.4 Company and governmental help

The governmental help and the general help of the company cannot be separated from each other. Because the company must arrange everything for the expat as well for the government. For example, the company did send an e-mail to remind the expats that they must fill in the tax forms for the Dutch government. “The Dutch government don’t send you an e-mail the remind you to fill in the tax declaration

forms compared to the Belgium of Italian government. That's the only think what I found and what I found is tricky".

3.5 Miscellaneous

After the personal barriers we did focus the interview on the personal development opportunities as well as the development opportunities in the company. Most of the expats do see good opportunities on personal level if they are staying in the Netherlands for a longer time. However the expected duration of their stay largely depends on the duration of the projects at the companies. If the companies don't have future opportunities to stay, the working visa will be withdrawn and the expats need to go back to their homeland. In other words, one aspect can't do without the other.

3.6 Expat future (improvement suggestions) in the Twente region

The interviews provide evidence that companies and higher education in the region Twente already have a high level of proficiency in dealing with expat affairs. As one of the expats was joking, "Maybe they [the company] can improve the cafeteria in order to accommodate foreign cuisine. Because not every expat relish the Dutch cuisine". Overall the companies already arranged everything to perfection in the business end.

4 Conclusion

Comparing the expat characteristics of the Netherlands from the HSBC survey, we find that the expats at the companies in the Twente region confirm the open and internationally oriented economy. Because companies are in need of expat knowledge they have to make sure to support the expats as much as possible in order to provide a healthy working and living atmosphere. As can be concluded from the results of the interviews, in general the companies that our respondents work for are very helpful towards the aspects that were discussed during the interviews. As one of our respondents said: "The company has its interest to get the person". From this statement we can deduce that there is a difference in interest between the company and the employee and the company has to invest a decent amount of time to accommodate the expats.

4.1 Expat future (improvement suggestions) in the Twente region

The general view of the respondents is that no major improvements need to be made. The work places where the respondents are employed already have developed their expat procedures in a professional way. The main reason for this, found throughout the interviews, is that the companies already have extensive knowledge about the necessary aspects to accommodate and help the expats. One could argue that this is a biased finding as the expats that we've interviewed are working at larger organizations that have foreign business relations and interests. Within smaller companies, which deal with expats on a less frequent basis or just employed a foreign knowledge worker for the first time, other results for future improvements could have been found. However, the vast majority of expats work in larger organizations and in that sense it is possible to conclude that the situation in Twente probably does not have a lot of differences as compared to the national average.

Although no major recommendations were made by expats, some small concrete changes are suggested. As one interviewee stated; "Maybe they [the company] can improve the cafeteria in order to accommodate foreign cuisine". However the lack of these kind of amenities did not negatively affect the respondents experience in Twente. Next to that, and maybe that is even a more challenging issue, is the question of the social life of the expats, as it involves their integration in society. The feeling of being an "outsider" in Twente, more than probably might have been the case in the large cities in the Western part of the country, is something for the society at large to think about, and work on more inclusive treatment of expats.

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Innovation Hubs, Student Driven Incubators in Regional Perspective

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Abstract: University Business Incubators (UBI) are being considered spatial clusters (Pont & van der Meer, 2012) in which entrepreneurship and innovation is stimulated based on academic knowledge. However, research has shown that most Business Incubators (BI's) do not meet expectations. Therefore a new BI sub-type will be presented called the 'Student Driven Business Incubator' (SDBI), which is mainly managed and driven for and by students. This type of BI is based on a hybrid management approach between bottom up management by students and top down guidance by the parent organization. It will be shown that the SDBI is a fit alternative to (costly) top down managed other forms of BIs. The strengths and possible challenges of the SDBI will be discussed and the first result of our project to raise 5 SDBI's for SME's in the Eastern part of The Netherlands will be presented. The first SDBI was established 2 years ago and now it is already an active network of 9 Innovation Hubs. In the research it was found these SBDI seem to have a positive impact on the regional innovation system thus preventing the so-called "Brain Drain" from rural areas to the larger cities.

Keywords: Innovation Hub, Business Incubator, Regional Perspective

1 Introduction

The impact of entrepreneurship on national economic growth is a widely recognized (Thurik & Wennekers, 2004). Economic growth and job creation activity is no longer characterized by reliance on large firms but has shifted to Small- and Medium sized Enterprises (SME's) and start-up firms. Entrepreneurial activity is one of the major drivers of economic growth. SME's and in particular growth oriented SME's are an important source for job creation (Valliere, 2006). In Western economies SME's represent more than 90% of all firms.

To stimulate start-up formation and within existing SME's to stimulate innovation often so-called spatial clusters are formed (Pont & Van der Meer, 2012). At the initiation of a spatial cluster, various benefits are expected concerning regional and economic development and stimulation of entrepreneurship in the form of synergy between participating entrepreneurs. At the same time, the availability of space at low costs is found to be the primary reason for creative entrepreneurs to settle in a certain area (Heebels & van Aalst, 2010). Resources spent by participating entrepreneurs on collaborative actions are limited and might not always yield the expected outcome in terms of synergy within the cluster.

Therefore, management and participants involved in spatial clusters are interested in coordinated processes or planned activities that have a positive impact on synergy within the cluster. It can be argued that successful policy towards synergy in spatial clusters is based on reciprocity between management and participants. At the same time, the relation between management and participants varies in each cluster.

2 Incubators for start-up's

A well-known form of spatial clusters is the Business Incubator (BI). Grimaldi and Grandi (2005) distinguish four different kinds of BI's; Business Innovation Centres, University Business Incubators, Independent Private Incubators and Corporate Private Incubators. In this paper we focus on University Business Incubators (UBI), focusing on start-ups and Business Innovation Centres (BIC), focusing on existing SME's. University Business Incubators are, as their name implies, directly connected to a University. Since 1990, more and more Universities engage in developing these kind of BIs. However, the results of these incubators are disappointing as most University Business Incubation programs do not meet the expectations (Wright et al., 2003). In fact, some UBI services even obstruct spin-

out companies in their business goals, growth and/or survival. As we suggested in our earlier studies (Claase et al., 2013) these problems can arise due to the top down management approach most UBIs employ. Therefore, we proposed a new management approach to overcome the before mentioned issues of UBIs. We define this approach as Student Driven Business Incubator (SDBI). As the name implies, the SDBI specifically focuses on student researchers and academic entrepreneurship. The incubation process is bottom up driven and managed by the target group students. This type of SBDI can work remarkably effective and efficient for stimulating start-ups as has been shown in examples like StartX in Paolo Alto, but will this bottom-up student driven approach also work for Business Innovation Centres for existing SME's?

3 Student Driven Business Innovation Centres for SME's

Organizing knowledge flows for innovation in SME's is mainly a matter of organizing manpower. This phenomenon is also known as "knowledge on the hoof". A dominant and proven concept for organizing these kind of systems of Open Innovation systems (Chesbrough, 2003) between SME's and (scientific) knowledge institutes like universities is the use of interns and graduation students (Van der Meer, 2007). This concept shows rather evident advantages as well as disadvantages. A successful approach to overcome the disadvantages and to strengthen the advantages was found in the Innovation Centre of Rotor, located in the town of Eibergen in the Netherlands. In this student driven Innovation Centre we found the following 4 basic characteristics:

1. a group of students (6 to 8) from different disciplines and universities work individually (and sometimes in small teams) on a portfolio of several innovation projects.
2. the portfolio consists partly of subjects given by the company and partly suggested by the students themselves. Each student gets 4 weeks to translate his own project in the portfolio into a project plan. In this way the ownership of the project is transferred to the student.
3. the group works in their own studio. In this studio there is a climate of hard work, exchange of ideas and cooperation towards a common goal.

4 The Innovation Centre is managed by a management-trainee of the Fast Forward program. This program gives recently graduated students during 24 months 3 management-trainee positions as well as a training (half a day each week) in management skills. The manager of the Innovation Centre is responsible for the making of the studio, the recruiting and selection of the student-researchers, the basic portfolio of innovation projects, daily supervision of the students, the reporting and communication of the results of the projects as they progress (for instant via social media and computer systems like SharePoint) and all affairs with the universities.

Based on an in-depth analyses of the Rotor case and the concept of this Student Driven Incubator, a formula was designed for a broader concept which later was called "the Innovation Hub" (compare Youtie & Shapira, 2008). The seven "Habits of a successful Innovation Hub" are postulated as:

1 Coordination over temporariness
2 Anchoring within the company goals
3 Shared ownership of a project
4 Focus on implementation
5 Combining young energy and deep experience
6 Strength in diversity
7 Save heaven on the shop floor

Core in the Innovation Hub is the responsibility of the students to drive the unit by themselves. The concept was spread out over companies in a rural region in the east of the Netherlands named the Achterhoek. This region has no universities and a rather bad reputation among academic students. Since the yearly budget for an Innovation Hub is about € 60.000 and for good operation it needs a critical mass of at least 6 students and a portfolio of 10 attractive innovation projects, starting an Innovation Hub is quit an endeavour for a single SME. The concept was thus first picked up by group of three companies Contour, van Raam en Waterkracht, to put together their budgets and projects. After an intensive preparation of 8 month under the guidance of Saxion University, this first Innovation Hub named Innovar took off in the beginning of 2012. It turned out to be rather successful in terms of outcomes and stakeholders satisfaction. As a sign of proud, the logo of the Innovation Hub is flanked by the logos of the founding SME's, as is shown in figure 1 below.

Figure 1

Logo of Innovar, the first formal Innovation Hub in the Netherlands

On the wings of the positive experience of both Rotor and Innovar over the past two years a project was started to establish a network of Innovation Hubs in the rural region of the Achterhoek. The goal of the network is also to prevent the so-called "brain drain" (Beine et al, 2001), the phenomenon were talented and educated people leave a (rural) region for economically more challenging regions. The final goal was to eventually form a "not at all Virtual yet not Formal University of Innovation" in the region where there is easy access to academic students and no chance at all to build a formal university.

4 Results

In the period 2013 – 2015 nine Innovation Hubs were ranging from a classical "1 company 1 Innovation Hub" model (like Rotor) to a daring "12 companies 1 Theme" oriented Innovation Hub. In this Innovation Hubs some 260 students worked on 180 innovation projects. 2 Innovation Hubs stopped their activities due to various external reasons (exit of mother organization, change in management or ownership of mother organization), 1 Innovation Hub stopped due to lack of results. Six hubs continued their activity after the 2 year project and are still in action.

All individual Innovation Hubs were completely private funded. Only the research and a light network organization binding the hubs and exchanging practice was partly funded by government. Based on the research a systematic good practice

approach was developed for new Innovation Hubs. Approximately 56% of the recruited student researchers have family ties with the rural region and some 8% of the student found a permanent job in the companies that formed the Innovation Hubs.

5 Conclusion

The Innovation Hub is a successful concept for the implementation of Open Innovation principles in SME's. The dual distribution of responsibilities, where students drive the innovation unit under guidance of top management of the SME's is a crucial element in the success. Innovation Hubs seem to be one of the remedies to prevent the "brain drain" from the rural region by providing possibilities to attract local academics back to the region and find good employees on academic level for the local SME's. The next step in the research could be "How to build not at all Virtual yet not Formal University of Innovation".

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Wonder-driven Entrepreneurship Teaching; when working with the ethical and existential dimension in professional bachelor education

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Abstract: This paper will in an overall and outlining way describe why the phenomenology of wonder and wonder-based approaches can become doorways for understanding the existential and ontological dimensions of entrepreneurship teaching.

Keywords: wonder, meaningfulness, innovation, entrepreneurship-education

1 Introduction

Contemporary research on creativity, innovation and entrepreneurship have now for a decade or more focused on social constructive, pragmatic, socio-cultural and socio-material dimensions of creative and innovative processes (Bager et al. 2010, Brinkmann & Tangaard 2010, 2012; Ledwith & Bessant, 2009; Sarasvathy, 2008; Bason 2012). New and innovative ideas are, following these approaches, understood as something individuals or professional communities of practices create in relation with specific others through product-, user- and design-driven innovation and different processes of ideation. Lately a more existential and philosophical-hermeneutic approach to innovation has been suggested. Verganti & Öberg (2013) talks about a change from user- to meaning-driven innovation,

Madsbjerg & Rasmussen (2014) about 'moments of clarity' transcending what can be captured by the socio-cultural and constructive approach, Scharmer and Kaufer (2014) talks about pre-sensing as a place for "hearing the call" from an emerging future and Hansen (2014) suggest an existential and wonder-driven approach to design-, innovation- and entrepreneurship processes.

We want to continue in line with this new framework of meaning- and wonder-driven innovation by focusing on the possible educational consequences of such an approach. Our empirical departure is our three-year phenomenological action research project: 'Wonder-based Entrepreneurship Teaching in Professional bachelor Education'. Ten senior lecturers in nursing and pedagogy from VIA University College, Denmark participated. The purpose was to investigate whether and how Socratic and philosophical dialogues and different forms of phenomenological and existential reflections in so-called 'Wonder Labs' could contribute to existing innovation- and entrepreneurship education in at least two ways: To deeply and existential root students in their profession and values and to bring students on the edge of their knowledge into the field of "not knowing but being".

2 Wonder

The phenomenology of wonder, Philosophical wonder, is different from curiosity, systematic analysing inquiry and critical reflection. The philosophical wonder is, as Hansen (2008, 2010b, 2012, 2014, 2015a) describes it, not as much an act or an effort of the subject as an ontological event and reaction that calls on us, while living our lives (Gadamer 2006; Rubenstein 2008; Vasalou 2012). We experience the philosophical wonder, when life meets us with severe beauty, goodness or truth and we - on behalf of this experience - may stop and rethink understandings we normally take for granted. The philosophical wonderment can be described as a special kind of thoughtfulness, restored to life from touching life-situations (see also Van Manen 2014).

Wonder then, can also grow from any kind of aesthetic experience, if we understand the aesthetic experience in a philosophical way, as a kind of existential and ontological experience (Jørgensen 2006, 2008, 2011). If we follow Jørgensen, the aesthetic experience can be characterized by the meeting of something greater than oneself - and a sensing of some kind of meaning or truth given to us by life.

In that sense, the phenomenology of wonder could be understood as a kind of dance between poetic dwelling and Socratic dialectics (Hansen 2012). In being in a fundamental wonderment we are under impression of both 'something' evocative that speaks to us and a philosophical questioning, which ask for what the mere analytical concepts cannot in logical and argumentative ways capture. Through this aesthetical, philosophical, dialectical and playful dialogue, which Socrates was so good at, we open ourselves for an ontological and silent dimension in our lives and professional practices. Thus the phenomenology of wonder is a phenomenology of both sensuous openness and philosophical presence[7].

In professional bachelor educations in Denmark we mostly learn the student problem-identification and problem-solving skills. This is indeed a needed qualification but at the same time limits the extent of the students and our view. Great deals of the ongoing innovation- and entrepreneurship-teaching, also take such departure from "irritations" and dis-harmonies (e.g. Bager et al 2010, Digman et al. 2012).

With the phenomenology of wonder as an underlying tone and a wonder-based approach to innovation and entrepreneurship we try to take on another view. We do not think innovation and entrepreneurship from a 'meaning-making-paradigm' but from a 'meaning-receiving-paradigm' (Hansen, 2014) and instead of dis-harmonies we take our departure from experiences of harmony.

3 A wonder-based approach to innovation and entrepreneurship

In a former research-project, Hansen (2010a) introduced a model of "four voices" in the pedagogic of higher education. This model has recently been developed by Hansen (2014), to include four different views of innovation and entrepreneurship. At its basis, the model points out how different voices make four different educational rooms, as shown in figure 1:

1. First we see the voice of the System. This is a voice of both law and practice telling us about right, wrong and what a good professional

[7] For an elaboration on how this kind of Socratic and wonder-based thinking can be unfold in a so-called Socratic and phenomenological-oriented action research approach, see Hansen, 2015b)

is. The reality is taken for granted and the society and market sets the agenda for what the professionals are supposed to do.

2. Next we see the voice of the Profession, expressing theory and empirical knowledge foundations of the profession.
3. The third voice is the Personal voice engaged in questions of "who and where I am in the voices of the Systems and Profession?" and in developing some kind of personal touches and style.
4. At last we have the voice of the Subject Matter. This voice is connected to a call and a sense of meaningfulness or dialogue with a phenomenon. This is the place of the artist or philosopher who listens and step aside in order for the matter, phenomena or materials self to speak. But, so easily the Professional voice and the voice of the System can stand in the way of the ontological voice of being or the phenomena itself. Even the Personal voice, if it is too self-absorbed, can weaken our sense of the voice of the Subject matter.

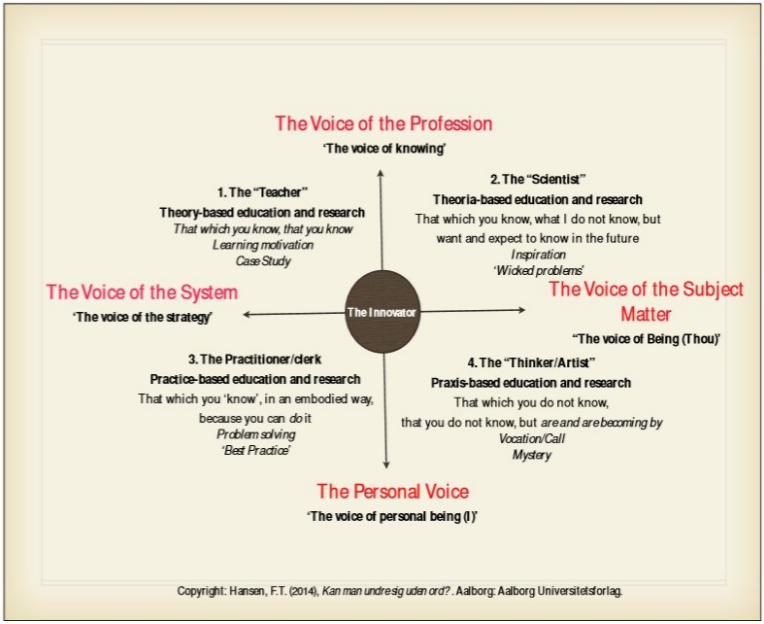

Figure 11
The four voices

As the model shows, the four voices can open up different rooms for innovation and entrepreneurship.

In room number 3, we see a commercial and problem-solving understanding of innovation and entrepreneurship. In this understanding the driver for innovation and the innovation-management comes from outside the profession, e.g. the user, the politicians or managers. In this room innovation seeks to solve specific problems in new ways but within the known paradigm.

In room number 1, the driver for innovation is science. Innovation is in this sense the application and translation of new research into practice. This view is a quite common understanding of innovation e.g. in nursing (Herholdt-Lomholdt 2013).

Where rooms 1 and 3 relies on a world of the known and a kind of no-risk situation, rooms 2 and 4 are looking into the unknown and risk-taking thinking and actions. In these rooms we see a kind of inner steering and breaking through the common paradigms in research and practice. This could be rooms for radical innovation, as they seem to make transcendence possible.

In room 2, we see a search for wicked problems and questions, that contemporary research and professional knowledge is not yet capable of dealing with. In this room the driver of innovation is an inspiration from the Subject matter but seen through the epistemological and knowledge lenses of contemporary research by looking upon the matters we know that we do not know yet.

In room 4, a wonder-based approach to innovation expresses itself. In this room we meet phenomenon's arising from practice through our being-in-the world and in an original sense without analysing or theorizing. We try, as mentioned above, to hear the call from practice and listen to the wonders of life. This room is a room seeking for the matters which we don't know that we don't know – but already - in some peculiar way, are called by as beings. This might be a place for sensing the unknown but emerging future. When entering this fourth room of wonderment and fundamental not-knowing, new ideas and meanings are not solely created by human beings. Meanings are merely understood as a call and as something given to us. This implies a shift from an understanding of innovative ideas and meanings as co-created to a new paradigm of meaning-receiving. This is a field of new beginnings which we theoretically approach through the lenses of existential phenomenology (Merleau-Ponty, Løgstrup, Marcel), philosophical hermeneutics (Gadamer, Ricoeur, Risser) and what Max van Manen describes as 'the phenomenology of practice' (Van Manen 2014).

Through our action-research project, we have tried to bring students from professional bachelor educations and ourselves into this fourth room. On behalf of eight teaching experiments in spring 2014 we have developed a model for wonder-based entrepreneurship education named the 'wonder-fisch'. In this paper we will only concentrate on some of the key-aspects of the pedagogic movements in our wonder-based approach.

4 Wonder-driven entrepreneurship teaching

First we separate the process of innovation and entrepreneurship into two connected parts – a *pre*-ject and a *pro*-ject (see also Darsø 2011). The pre-ject is a place for sensing and listening to a call and wonder through dialogues, reflections and longing. To let people reflect on what they are really longing for in their life and professional work on a more existential level is, we have now experienced, a very inspiring springboard for new and deeper questions. The pro-ject is a place of making things happen by following a now qualified wonder and longing, drawing on available resources, making plans and realization.

In this paper we concentrate on the pedagogic of the pre-ject. The objectives of the pre-jet is to get in contact with the call from practice, listen to the meaningfulness of life - what the students really find precious - and on behalf of this formulate a longing.

In the pre-ject, we have been working in "wonder-labs" by inspiration of "Kundskabsvaerkstedsmodellen" (Erstad & Hansen 2013, Hansen, 2014)[8]. Basically we have done 4 different pedagogical movements through dialogues – and in some cases through music and drawings. These are:

1. The phenomenological turn and wonder
2. The Hermeneutic turn
3. The Socratic and dialectic turn
4. The existential and phronetic return the 'cave of our ordinary living'[9]

The fourth phase (the phronetic and existential return) is present as a kind of bridge to the pro-ject, where the three first turns are settled in the pre-jet.

[8] See også the research unit, Wonder Lab, at Centre for Dialogue and Organization, University of Aalborg, Denmark

[9] For a richer and in-depth description of these movements in the Wonder Lab, see Hansen 2015a

The phenomenological turn is a turning towards a touching situation in practice. All students are asked to tell (or e.g. draw) a real-life situation connected to their profession that made some kind of impression on them. The story has to be open-ended in the sense that it is forbidden to identify problems, do problem solving or to have any point telling the story beforehand. The students are asked to listen with an open heart and mind to the stories of each other. By telling these stories, we often see the vulnerability of the students and at the same time their proudness - and values. From these often remarkable phenomenological stories we try to open the students and ourselves for genuine wonderment and a stepping into a community of wonder. As mentioned above, wonder is characterized by deeply questioning our pre-understandings and the "taken for granted" - by the silent listening for the meaningfulness of life. When wonder happens to us, we take a step into the open and thereby experience the possibility of enlarging our horizon or even sense a radical break through. Philosophical and aesthetical wonderment then, can be a doorway into the fourth room of innovation and is grounded both existential and ontological.

But, to enlarge our horizon we need a dialogue with something or someone outside our subjective and cultural views. Therefore the hermeneutic turn is of importance by letting our wonder meet humanity's Grand Stories about themes and questions that came up within the personal story. Great stories refer to philosophy, arts, music and other kinds of artistic comprehensions of life that are known by the majority. In a dialogue around these great stories, we do have the opportunity to discover and even break through some of our historic and cultural pre-understandings.

The Socratic and dialectic turn refers to the way we speak to each other in the community of wonder. As Hansen (2008) with a reference to the German philosopher Hannah Arendt points out, we can learn from the Socratic way of thinking and questioning. What Socrates did, was to ask human beings to think by themselves instead of downloading the thoughts of others. As educators in the pre-ject, we ask for the student's independent and original thoughts and beliefs in a friendly and playful atmosphere. And at the same time, we tease, provoke and search together for the limitations of these thoughts. In truth – but also surprisingly – it seems to be a great challenge for students of today, to think by themselves. Students in professional bachelor education have for several years been learning to replicate the knowledge and research of their profession. To think for themselves seems to be both difficult and way out of comfort zone.

The pre-ject ends up defining a new qualified longing and often also a new but deeper wonderment. This longing, a longing for some kind of fulfilment of life, will be an important leading star of the pro-ject, and is now ready to meet reality for

further qualification, ideation and realization. In the pre-ject the students develop and connect their own values and thinking to processes of innovation and entrepreneurship, which makes us talk of it as an existential turn in entrepreneurship-education. At the same time, the students also listen to something experienced as a wondrous "call" from practice. This can be described as an ontological turn in entrepreneurship education.

5 A vision

The existential and ontological turns in entrepreneurship education have implications of importance. In professional bachelor education, the phronetic judgement and ethical dimensions are at stake all the time. We do not connect the Aristotelian concept of phronesis to a practical cleverness in getting things done as quick and effective as possible in an intuitive way. Instead we follow Gadamer (1986, 2006) when he connects the Aristotelian concept of phronesis to our existential and ethical awareness of being-in-the-world having an ontological musicality for the voice of being, or voice of what the situation, relation or phenomena is calling us to do. This demands a readiness to 'stand in the openness'. Every time a nurse meets a patient, every time a pedagogue meets a child, she has to make some kind of decisions and create unique solutions, and these decisions draws on her values and ability to judge. With a meaning-receiving paradigm instead of a meaning-making paradigm – and with a wonder-driven entrepreneurship education in professional bachelor education - these solutions might tend to draw on ontological-based meaningfulness given to us by life itself, rather just on an epistemology of practice and the 'functionality', that the system, profession or pragmatic and problem-solving practice calls us to do. To get this musicality for the voice of being or Subject matter requires a training to meet other people and situations with the special kind of ontological attentiveness and wonderment.

If we understand the phronetic judgement as a key competence in professional bachelor educations, this would mean, that entrepreneurship education would not only be for the few enterprising students starting up a business - but for all of them. But then we have to think differently about how to bring in the existential and ontological dimensions into entrepreneurship teaching. That is: To see the wonder in daily life and profession as a new source for radical innovation and entrepreneurship teaching.

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Serious gaming for systemic entrepreneurialism

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Abstract: The term entrepreneurialism doesn't exist. In this paper it is coined to distinguish entrepreneurship from entrepreneurial behaviour by employees. In an serious gaming experiment among Physical Therapy students, we tried to design a learning intervention to advance entrepreneurial behaviour in a non-business setting.

Keywords: Serious gaming, Physiotherapy

1 Introduction

An entrepreneur in this definition starts and maintains a business for personal financial gain and risk. The employee exhibiting entrepreneurial behaviour does the same, but not for personal financial gain and risk (it can be argued that a certain kind and amount of gain and risk are involved, albeit these are not primarily financial). Entrepreneurialism is a relevant proficiency for professionals in general and for health care professionals in the current political and social Dutch climate in particular. This is not something that is widely recognized by health care students, nor until recent, by professionals or teaching faculty for that matter. That is why we have developed a powerful learning environment in the form of a serious game which has proven to motivate and entice both students and teaching faculty.

On both a national and a European scale, society is changing. Societal change is of all times, but it is the magnitude of current movements that appears to be rather exceptional. According to Rotmans (2014) we are currently not just living times of transition, but living a transition of times. And these are not just isolated dramatic changes, but interrelated movements: technologically, economically, ecologically and politically. One could even extrapolate this view on a global scale: the distribution of wealth, knowledge, labour and economic prosperity is shifting

substantially (SER, 2015). And these interrelated transitions impact social and socio-economic configurations. Changing forces have not yet settled and might even proof to continue to be present, causing permanent instability of these configurations to a certain extent. With a more specific focus on the public domain in The Netherlands, (international) developments have an impact on the public morale and consequently on responsibilities and relationships of institutions and hence individuals. This leads to the forming of a new configuration of actors on more than one level. Governmental institutions, public organizations and commercial enterprises have to find new ways to interact. This trend obviously increases the demands on individual professional behaviour. After all, the diversity of demands that the professional encounters will increase: the individual client's expectations will rise in pace with his felt financial responsibilities for services rendered to him, while at the same time the professional is held accountable through all kinds of newly developed standards, that just as rapidly are outdated again. This hectic environment requires new ways of professional behaviour and interaction to constantly re-balance effectiveness, or the functionality of a system, and efficiency, the financial feasibility of a system. To be able to keep up with the pace of this constantly changing diversity of demands, the professional needs to achieve and maintain a higher level of proficiency in certain existing competencies, while at the same time he will need to acquire new competencies.

2 Theoretical background

Entrepreneurialism, organizational and innovation capacities have become increasingly relevant, if not essential competencies in daily practice of health professionals and thus in the education of education health care students in recent years. Students are expected to learn and become proficient by theoretical study, exposure to project assignments, tutoring and lectures. Although these relatively classic educational facilities are obviously effective in certain contexts, we were not pleased with student motivation in regards to the learning of the competencies mentioned here before. Generalized, these competencies do not naturally have the professional focus of students in vocational health care programs. This may be due to their unjust expectations of the demands of current practice. Therefore we have developed an educational course line that functionally and organically connects entrepreneurialism, innovation and organization with specific health care competencies. The core of this educational course line is formed by a serious game that second year students of the four-year physiotherapy and podiatry education

programs participate in. The design of this game is based on the principles of GIMMICS at the Groningen University Institute for Drug Studies (Werf et al, 2004). In the first year phase of their education, students are prepared for effective gaming through lectures, assignments and workshops, in the third year they develop an innovation that is partly based on the competencies they developed through gaming. In the fourth year students apply these competencies in both real practice as well as in their thesis work.

The game allows for individual patient oriented problems, as well as for organizational process design and implementation. At Saxion we use the term 'capacity': for the individual client the capacity to maintain one's health, to improve it and to take charge, for the professional to initiate, facilitate and to support health maintenance and improvement. Part of the increased complexity in the organization of health care is the development of increased variety in health and health care needs. This movement requires other ways of organizing and process designing. The professional no longer solely deals with individual clients, he is responsible for the establishment of health care processes and their financing as well. And he can't do that all by himself, re-design of work processes requires cooperation in- and outside of the own organization, and often interdisciplinary.

3 Serious gaming as an educational provision

Serious gaming has been popular for a while in different sectors such as the recruitment industry, health care and to a certain extent in education. Often, digital games are meant when serious gaming is referred to. Digital gaming progresses along a somehow pre-programmed pathway. This is a linear progression, the development and outcome of which can be predicted and is limited. However, there are other forms of learning with the support of a game, or rather: within a game setting environment. The learner is emerged in a physical gaming environment and all his actions are executed in the context of a fictitious, but authentic set-up. Progression, nor outcome can be predicted, since interactions are situational and the context is dynamic. 'Things' happen within the fictitious environment in which participants interact. These 'things' are either interventions by the game management, or initiatives of the gamers themselves. In serious simulation gaming, situations can be designed, contexts can be constructed and manipulated by interventions. This allows for powerful learning: action-reaction in authentic context and in competition. Purposeful interventions can influence the course of

action without disrupting the flow of the game. That implies normativity: interventions are purposeful and implicate judgement about previous actions.

3.1 The case within Physical Therapy

Such a setting we created for 2nd year physical therapy students at Saxion University of Applied Sciences in 2011. We conducted a pilot for a group of 16 students and when this pilot proved to be successful we implemented the game for all approximately 180 students in yearly cohorts. 45 students in periods of 8 weeks, are involved in the game for 1 day per week. Since then we have continuously developed the game, which was designed to focus on competencies of innovation, entrepreneurship and organization.

The game has a duration of 2 months and is performed 4 times per academic year, allowing for approximately 20 students per game period. Groups of five second-year students are challenged to compete against each other with the assignment to establish a physical therapy practice and become the largest in terms of revenue. It is an interactive physical game in the fictitious town of Polderveen (pop. 40.000) in a real world environment, i.e. there are rooms, real desks, treatment tables, equipment, computers, telephones and people. Polderveen is characterized by its situation in the natural typical Dutch environment (inland sea, polder) and its different neighbourhoods. Local news and actualities are shared through a digital newspaper. In a pre-game period of 2 weeks, 5 new enterprises are being established by as many groups of 5 physical therapy students over a period of 8 weeks. Students participating in the game are expected to produce a corporate mission statement, a business model canvas, which is then used to create a business plan, a website, logo, promotional materials etc. They are expected to relate to relevant enterprises in or outside of town, to referring doctors, to other professionals and to generate patient influx and establish durable relationships.

The game progresses unpredictably, due to ad hoc interactions between gamers and game management, although there is a rough script of interventions: small and larger events that take place in Polderveen or directly aimed and the individual organizations or therapists. The electronic component in the execution of the game consists of databases (i.e. management cases), a gaming website and an electronic patient filing system. The game has a visible and an invisible environment. The visible part consists of the enterprises, the interaction between gamers and third parties and a website. The invisible game management part consists of the game management and the information system. Interventions are conducted by the game management mostly based on situations, decisions and interactions by and between

gamers. Interventions consist of a wide variety of management and patient management problems that may or may not be picked up by the gamers as opportunities. Actors visit the clinics in a variety of roles: as patients, as a representative of an insurance company, as the representative of the professional association, as the daughter of a deceased patient etc. For instance: the therapists in a practice are confronted with the request by an 11-year old girl that wants to be treated for low back problems. However, she hasn't informed her parents about this visit. Her story is well composed and convincing. Practices appear to react in different ways, from no treatment without parents' consent, to contacting the parents, to accepting the girls request without further ado. In the latter situation game management may call the practice in the role of one of the girl's parents, demanding to speak with the therapist in question and expressing their anger. The quality of the response is registered and calculated to contribute (or not) to the organization's revenue.

All practices in the fictitious town of Polderveen can monitor their revenues real time and in relation to the competition. Quality judgement is thus translated into revenue and the intention to perform, i.e. increase patient influx, improve customer satisfaction and improve relationships with referring parties etc., becomes the main constituent of competition. Unlike other educational formats, no direct feedback is provided, nor by teaching faculty, nor by game management or others. Just like in the real world, students are dependent for information on the quality of their actions on (the development of) their analytical skills and obviously may take action to find out. For instance, if they decided to take the girl in the previous example into treatment, they may be wondering why this has costed them revenue. They may be able to repair some of that loss, if they on second thought decide that this was a fallacious action and call the parents. In the game, there is no direct contact between game management and gamers, there are only role players. The shareholder is another example of such a role, played by faculty members. The shareholder has a financial interest in a private practice. His aim for the practice is therefore to perform, gain revenue and grow. His role is to stimulate and agitate the therapists in the practice to continuously be sharp on their actions, to improve their cooperation and to innovate. One of the things he initiates is inter-collegial meetings in which professional behaviour is discussed in relation to the organization's economic performance. For instance: he has discovered from management information that the length of treatment series for the different therapists in differ dramatically. His main question to the assembled group forming the organization is 'how do you as individual therapists, in relation to professional standards, customer satisfaction and economic performance, motivate your professional behaviour?'

And the second issue addressed is 'how can we discuss these differences so that we can all agree to balancing professional quality with economic performance?'.

4 Conclusion

The Dutch Organization for Applied Scientific Research TNO, regarded the effectiveness of serious gaming in education. Educational gaming is a stimulating active and self-directed way of learning. It results in a better understanding of and insight into the subject matter. The simulation of authentic clinical situations makes abstract issues and topics applicable in a practical way. The element of competition motivates students and stimulates students' development, because gaming is consistent with their experiences. These factors and the sense of responsibility for all interactions that students experience, make serious simulation gaming a powerful learning environment (Diggele & Straetmans, 2001). Existing assessment and research methods are not appropriate for the measurement of the effects of serious gaming. Judgment of students' performance is integrated in the game's progression. Naturally the registration of 'behind the scenes' performance judgements are transparently provided post-game. Internal research shows significant increase in student motivation for the competencies entrepreneurship and organization since the introduction of the educational game (Verschueren, 2011). Aspects of the powerful learning environment that scored significantly higher were professional authenticity, activation, navigation, involvement, adjustment to learning styles, variation and purpose.

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Corporate Social Responsibility in Regional and International Entrepreneurship

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Abstract: This paper is debating the regional implications of Corporate Social Responsibility in three important global economic regions. After an introduction of the concept of Corporate Social Responsibility, some characteristic of each region is presented. Also some good examples are given. In the conclusion it is emphasized that the application of Corporate Social Responsibility can advance both, the international position of Russian Businesses and the attractiveness for high talented experts.

Keywords: Corporate Social Responsibility, Russian Businesses, regional differences

1 Introduction

The topic of this article is Corporate Social Responsibility. The topic is chosen because it is essential struggle for modern business in Russia as well as in many countries abroad. Corporate Social Responsibility is a relatively new trend for Russian businesses, however most industry leaders have already started to run social programs. But if we want to develop and reach the level of international business we need changes to form socially responsible business. Still business has a long way to go to become really socially oriented and the economic situation in the world can now ruin all previous results.

This paper is divided into several main points: The definition of Corporate Social Responsibility, Arguments for businesses to be socially oriented and at the end of this paper, some successful examples of Corporate Social Responsibility are given.

2 Definition of Corporate Social Responsibility

In this section the definition of Corporate Social Responsibility is given. This is a form of corporate self-regulation integrated into a business model. Corporate Social Responsibility involves the usage of resources in the way they would bring benefits both to the owner and to society. From this definition in the next section arguments for businesses to be socially oriented will be addressed.

3 Arguments for businesses to be socially oriented

In this section, first the general arguments to apply Corporate Social Responsibility are given, followed by its mission. This section is closing with a list of benefits of the application of Corporate Social Responsibility. Since the very beginning business was closely operating with society. It could exist only in case there were people, for whom products and services were produced, for people who have demand for the product or service. These basic remained and things haven't changed even till nowadays. Business still depends on the society and it at the same time influences industry greatly. But we do need changes in terms of attitude from average entrepreneurs and businessmen.

Business has become more than just an economic unit. Now it is a part of complex surrounding consisting of various stakeholders like consumers, suppliers, mass-media, unions, employees and shareholders. It should definitely help the society, carrying out various social programs, cooperating with government. Social expectations concerning good corporate activities have already formed and your target audience is watching over every your move. So there is nothing left for corporations but to follow them in order to be successful.

3.1 The regional differences of Corporate Social Responsibility

Nowadays we can see the difference between how the look at Corporate Social Responsibility varies in different areas. Two major dominating models of Corporate Social Responsibility can be found: American and European. As the topic of this paper is "Corporate Social Responsibility in regional and international entrepreneurship" in the paragraph below, the Russian model is debated.

- American way of Corporate Social Responsibility is characterized as the one with most authorized enterprises. Corporate aims are –

profitability and responsibilities in front of shareholders. Charity is also widely spread activity, highly appreciated by the society. A big percent of all social programs is financed through corporate funds and all the expenses on solving social problems reduce the amount of taxes paid by the corporation.

- European way is to pay higher taxes and thus give money to the government to carry out various social programs. Today European corporations are mostly focused on 3 main types of Corporate Social Responsibility: economy, employment and protection of the environment.
- Russian business hasn't decided yet which way to choose. In the beginning of 90-s American type of Corporate Social Responsibility was brought, but now our companies start to take interest in the European approach and consider social matters to be a very important part of their activity.

We can also define two main directions of realizing Corporate Social Responsibility missions: external – high quality goods, charity, sponsorship, environmental protection, education, transparency of accountancy, help for the regions etc. Internal model involves staff development, high salaries, medical insurance for employees, help in solving social problems for employee families (for example to find a place to live or a kindergarten for children). The most solid look at global problems belongs to the United Nations. They listed 17 Millennium development goals for sustainable communities development.

3.2 The benefits of Corporate Social Responsibility

Independent of the regional approach of Corporate Social Responsibility, an important number of benefits for businesses are identified. These benefits are listed below.

- Following moral standards and responsibilities
- Driver for changes for better performance
- Finding solutions for urgent social problems
- Changing customers' expectances and having closer relationship with the society
- Creation of excellent reputation
- Avoid contradictions with government and even getting support

- Opportunities for partnership with like-minded people and projects
- Opportunities for expanding business and global integration

4 Examples of Corporate Social Responsibility

As is proposed in the above sections, it becomes a trend to become an Corporate Social Responsibility. Based on the characteristics of Corporate Social Responsibility it is possible to list companies and corporations, whose policy has become more socially oriented. There are only some of them: Google, IBM, Shell, Xerox, The Walt Disney Company, KPMG, BP, Barclays, Kraft Foods, Nike, Reebok, BMW, Peugeot and Daimler-Chrysler.

5 Conclusions

In the developed countries Corporate Social Responsibility is already an essential part of modern business. Many companies have admitted this way not only because of their own position in this matter, but because of social pressure. In opposite, the world is facing one of the greatest financial crises in history, many companies have already gone bankrupt and many others are on the way. The main tendencies of Corporate Social Responsibility development in Russia unfortunately are: stopping of various social programs, raising level of employee layoff, dishonest methods of gaining profits (some companies make employees work overtime or pay less under the threat of redundancy). The process of forming Corporate Social Responsibility will take a lot of time and effort, but the results worth this!

Building Challenge: International education model for construction education

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Abstract: The Building challenge is a new education model in which students work in mixed international teams on a real assignment, in order to use the different approaches of architecture and construction in different cultures to come up with new creative ideas for renovation of the built environment.

Keywords: Practical Development Workshop, Construction Management

1 Introduction

The international Building Challenge is a new experience for students and teachers alike. The aim of the challenge is to solve a real building related problem, by co-creating a solution in an international team. The fact that the project last just one week is part of the challenge as well. How does one divide time to finish a project at a conceptual level within a week? This was the question many students asked

themselves before the start of the project. Two separate Building Challenges have been organized, one in Enschede and one in Moscow.

During the Building Challenge project week, students were divided in mixed international teams of Dutch and Russian students. During the building challenge the students spent at least 40 hours on the job. Some groups had to fight for a good result a bit harder than others. Such a short time required ample support from coaches to help the participants with finding the right questions. Also several experts from different spheres (from science, business and government) helped the student teams to deepen their understanding of what are important issues to be solved. In this summary of the Building Challenge the atmosphere, the educational aspect and the results of the project week will be highlighted. Furthermore, the principles and experiences of the building challenge are written down. Before the actual project week, the students were prepared with lectures and workshops, as described in the second section. In the third section, the actual Building Challenge week is presented, followed by the results and concluding remarks.

2 Preparation

In the introduction was already mentioned that the actual Challenge Week consisted of around 40 hours of project work, but in order to get meaningful results, a thorough preparation is required, in order to get the most out of the week.

2.1 Project preparation

The Building Challenge project week and assignments were prepared for two different cases, both in Enschede and Moscow. Since there are large cultural, business and political differences, quite some time was needed to develop the “wish to cooperate”, into a real assignment for students. In the end, the organizers settled for a situation in which the preparation for the students was done in a different way in both countries, taking into account the different style of learning and different level of exposure to practice in both The Netherlands and Russia. It was however crucial that the partners from both countries agreed on the intended learning outcomes, so that even if the way towards these goals may be different, the intended end result will be comparable.

2.2 Assignment introduction

Since there were two different locations for the Building Challenge, each with their own characteristics, culture and architecture style, there were two different assignments.

Enschede

Domijn is the housing cooperative that commissioned transforming the Polaroid building in Enschede. This Polaroid building has been closed since 2008. The assignment was:

> *Create a design in which the current office spaces are transformed for residential purposes under the following conditions:*
> - *Attractive architecture*
> - *Lifespan of at least 50 years*
> - *Target group: 1-2 persons household*
> - *Surface area range: 30-60 m2*
> - *Rents to max. €350 - €650,- per month*
> - *Maintenance costs max. €600,- per year per apartment*
> - *BREEAM label: Excellent*
> - *Energy neutral on building level*
> - *Furnishing plan for environment and parking*
>
> *In short: Create a rentable investment with a minimum of effort a maximum living environment. Create a connection between the transformation challenge and the Performance Factory formula.*

The Performance Factory formula which is mentioned above is one of the parts of the large former Polaroid complex that has been developed and is in use as a creative business incubator.

Moscow (Dolgoprudny)

The organization NOIFA for Research in Timber Framed Architecture developed together with Saxion University of Applied Sciences and the Russian Presidential Academy of National Economy and Public Administration the idea to renovate a monument on the territory of the former Kusnetsov estate / Mysovo estate in Dolgoprudny, a town close to Moscow. This estate is classified as a regional historical monument, and next to the main building, there is a second building that used to be the estate's horse stables, but was later used, in communist times, as a garage complex. The building is in dire need of repair and the international student

teams were challenged to develop plans for it. The second floor of the building was originally built in Fachwerk (Timber Framed architecture) and should be restored as such, based on historical images. The plans of the students also had to adhere to the following instructions, based on the so-called "Green Standards" of the Russian Federation:

> *The city of Dolgoprudny (the owner of the terrain) is thinking about making these former horse stables into an inspiring practical example of a "passive building". The building must be designed to have an annual heating and cooling demand as calculated with the "Passivhaus Planning Package" of not more than 15 kWh/m2 per year in heating or cooling energy OR be designed with a peak heat load of 10 W/m2.The total primary energy (source energy for electricity, etc.) consumption (that means primary energy for heating, hot water and electricity) must not be more than 120 kWh/m2 per year. And thirdly, the building must not leak more air than 0.6 times its total volume per hour (n50 ≤ 0.6 / hour) at 50 Pa (0.0073 psi) as tested by a blower door.*
>
> *The city asks you to think about all these items and prepare a plan and design for the park and former horse stables, including a 3D visualization of the restored horse stables. Also a twenty year plan for maintenance of the structure is required. Important is to work on the total cost of ownership principle, in other words, have a financial plan ready which includes both construction investments and maintenance costs.*

The city did not yet have a designated use for the building, so the student teams working on this assignment also had to come up with a proposal for a function.

2.2 Preparation lectures

During the kick-off meeting and introductory workshop it quickly became clear why the Building Challenge is so relevant at the moment. Transformation or reuse of existing buildings is a very topical theme in both Russia and The Netherlands. Several buildings are empty because of the economic crisis both countries went through, or sometimes for other reasons as well. The main task of the Building Challenge is: Change an unattractive environment into an attractive one. To help the students in getting into the right mind-set, the universities involved organized various workshops during the two weeks before the building challenge. The workshops discussed the following topics:

- Existing building methods
- Construction existing buildings
- Building physics/ fire safety/details
- Architecture & Building rules
- Property maintenance
- Property exploitation calculations

The workshops gave the students a lot of inspiration to start with the assignment, as they reported afterwards.

2.3 Site visit

Enschede

Under supervision of two teachers, all the students had a look at the Polaroid building in the Enschede city centre. This gave the students a good impression of the building and gave them some perspective on the building's terrain and surroundings. The students had the opportunity to explore the building and form ideas. The purpose of the site visit was to gain an impression of the function of the spaces, the construction and the installations. Many pictures were taken during the excursion that showed up nicely in the final presentations.

Moscow (Dolgoprudny)

The site visit to the Mysovo estate was combined with a visit to the Dolgoprudny town hall, to hear about the plans of the government with the building and what the plan for developing the area was, in which the former horse stables building is located. Students understood about the options and limitations that they had in searching for functions for the renovated building.

3 Challenge week

During the actual Challenge project week, the students worked separate classrooms. The challenge began on Monday morning at half past eight. It started with dividing the team roles within each team, such as designer, constructor, installer, cost expert and building engineer. Soon it would become clear who assumed which role in each team. To support the students, the coaches and outside experts often visited the teams. On top of that, appointments were scheduled for students to ask questions at an expert meeting. The entire week, students were confronted with GROTIK.

GROTIK is a Dutch acronym for Geld, Risico's, Organisatie, Tijd, Informatie and Kwaliteit (In English: money, risks, organisation, time, information and quality). Using GROTIK, as a project management instrument, students received the tools to develop the building that was assigned to them, both in Enschede and Moscow.

The first phase of the project consisted of brainstorming and designing. In this phase it is important to map the customer wishes. In the Enschede variant of the project it was not difficult for the students to empathize with the customer, because it concerned social housing, which is also targeted at young adults, just like them. For Moscow, the function of the building was more of an open question for the city of Dolgoprudny and consequently, students needed more time in thinking about what to do with the building.

Another important aspect during the design phase is the plan for the surrounding area. It is important to integrate a building in its environment. In the Enschede case, the challenge consisted of integrating the apartment complex at the Polaroid building environment, an area with a clear industrial atmosphere. With the aid of the teachers, the students investigated the renovation of the existing building. From this they concluded that the construction of the Polaroid building is over dimensioned, easily allowing for another floor to be built on top. Some groups used this in their design, to create a larger building with multiple apartments.

The transformation of the building is subject to some conditions that affected the design. Attaining an excellent level of sustainability was a requirement. For this project, the BREEAM label was selected to meet. The students' experience with BREEAM was limited, so for this requirement outside experts were often consulted. The same happened for the energy neutral requirement. The students thought of different concepts such as high quality external wall isolation, natural and on-demand ventilation, heat pumps for floor heating and cooling. One of the groups contacted a specialized consultancy company, TripleR Advies, to get advice on sustainability. They could help us to get a good Coefficient of Performance as soon as possible.

4 Results

Enschede

The results of all groups were presented at the final day of the Building Challenge week in the main conference hall at Saxion University of Applied Sciences. All students, teachers and jury members attended the meeting. The different groups invested a lot of time to prepare for the presentations, and eventually each of the

eight groups came up with one. Some groups used PowerPoint in their presentation, others made use of Prezi. Some students were more motivated to present the concept than others. Most likely, this was the result of the busy week before. Each group presented their own concept by using the 3D model. Using Revit or Sketch Up, many groups created an artist impression to show. Other important parts to present included the layout of the terrain, the construction, the costs and the installation concept. A central point was to integrate design into the Polaroid Building. After the presentations it was the judges' turn to question the students. This included questions such as: Why is this the best idea possible? How do you convince the client Domijn that they should go for your project?

After the jury consultation, the result was presented. The jury not only judged the concept itself, but also the way it was presented to Domijn. The jury was very satisfied with the results of each group and the extent of the work done on each project. All groups were very enthusiastic about the final results.

Moscow

The results of the Building Challenge were presented for a jury that consisted of members from the city of Dolgoprudny, university lecturers and from the NIOFA research organization. The student teams worked on developing functions for the horse stables for the Mysovo estate and also presented 3D visualizations of their actual design of the building. The jury considered the level of the work of the students to be of high quality. Based on the work of the students, in close collaboration with NOIFA, the city of Dolgoprudny decided to open a tender for the renovation of the building, in which they drew inspiration of the work of the students.

5 Conclusion

The Building Challenge week was seen as a successful week for the students, teachers and jury. During the week the students were able to apply what they had learned, and had gained inspiration. An impression of the work in Enschede can be viewed in the short movie clip “Impressions of the building challenge 2015” (https://www.youtube.com/watch?v=EQX93pyrp9I). It was also a week of ups and downs, however. Some assignments were easier to work on than others. The process was smoother for some groups, and less so for other groups. In the end however, each group was successful and the final results were excellent, for both the Enschede as well as the Dolgoprudny (Moscow) case. The international building

challenge was considered by all participants to be a great way to bring knowledge institutes and industry together and make use of fresh and different points of view from international visiting students.

Innovate!

Create!

Develop!

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